

SAFETY

OCCUPATIONAL HEALTH & SAFETY PROGRAM

2014 -2015

 **PUTZHEIM CRESCENT INCORPORATED**

 **PUTZHEIM CRESCENT INCORPORATED**

OCCUPATIONAL HEALTH & SAFETY MANUAL




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Management Commitment

Policy Statement

 **PUTZHEIM CRESCENT INCORPORATED** is committed to creating a workplace that is safe, healthy and injury-free. Our employees are our most valuable assets, and their safety and health is our first priority. Safety is essential to all business functions and is never compromised under any circumstance. Every employee has a responsibility to maintain our work environment including reporting hazards and working toward preventing accidents.

We will provide training, review our procedures, review accidents and maintain the equipment. In the event of an injury, we will actively work to return the employee back to work when medically possible. Our Drug and Alcohol policy will be strictly enforced with no exceptions.

We will provide support to our Safety Committee by providing them the time, employees and management commitment needed to reach our common goal of an injury free workplace. I appreciate your full cooperation to follow our safety program and make our workplace safe, healthy and injury-free.

Sincerely,

Putzheim

Cornel Draguta

President and CEO

Safety Committee

An effective safety committee can be the key resource for implementing an organizations overall safety program.

The goal of a safety committee is to have all employees involved with the company safety effort in an active manner such as conducting accident investigations or planning employee safety training sessions. The committee can help communicate safety information to everyone in the organization and ensure all employees understand how to work safely.

Responsibilities

Responsibilities of the committee shall include:

- Regularly inspecting the facility to detect unsafe conditions and work practices.
- Actively participating in safety and health training programs and evaluating the effectiveness of such programs.
- Planning improvements to existing safety and health rules, procedures and regulations.
- Assessing personal protective equipment needs.
- Overseeing emergency response preparedness and drills.
- Serving as a resource for safety questions.
- Planning safety promotions or incentives.
- Immediately investigating any workplace accidents.
- Performing Job Safety Analysis.

The safety committee will proactively solve safety issues in the workplace, control the cost associated with accidents and workers compensation claims, and increase everyone's awareness of safety.

Establishing the Committee

- Safety committee member shall be selected and comprised of a representative sample of all employees, both management and non-management. The committee members will be chosen by their supervisor's recommendation based on leadership qualities and a willingness to serve on the committee.
- The committee meetings should be scheduled on a consistent basis on at least a quarterly basis and should focus on safety and loss prevention issues exclusively.
- A meeting agenda shall be developed beforehand by the Safety Committee Chairperson or Secretary and provided to all committee members. This will allow the members to familiarize themselves with the meeting criteria and be prepared.
- Documentation of the meeting minutes shall be kept and posted for all employees to review. This will help keep all employees abreast of the committee's purpose and results. Documentation will include:

Old Business or Pending Issues

- These are safety issues that need some degree of attention or works in progress. Each issue should define;
 1. Details of the issue,
 2. Details of the proposed controls or corrections,
 3. The targeted completion date on each to ensure follow up. Any “unclosed” issue should be carried over to the next meeting summary/minutes until completed.
- Methods addressing issues will include:
 1. Additional training,
 2. Physical changes, improved maintenance and housekeeping,
 3. Machine guarding,
 4. Personal protective equipment (safety glasses, gloves, etc.),
 5. Changes or new safety rules and/or operating procedures.

Inspections

- Inspections shall be conducted on a schedule based on the Safety Committee’s recommendation.
- Inspections will include safe employee work habits. If any eminent hazards are observed, they should be reported immediately to the area’s supervisor.
- List all deficiencies in the Safety Committee meeting summary or minutes.
- Note how it will be corrected, who will complete and a target date for completion.

Employee Suggestions

- Employees shall be encouraged to give safety ideas or concerns.
- The suggestions should be listed in the Safety Committee summary or minutes.
- Suggestions will be reviewed by the committee for practicality, cost effectiveness and how it will prevent an incident.


Incident Reviews

- Incident reports will be reviewed at the meeting.
- Each incident review shall cover:
 - Detailed description of the incident,
 - Root causes (i.e. improper action, poor training, physical condition, etc.),
 - Preventive measures for each cause. Target date for completion should be noted in the minutes.


Incident Statistics

- Information such as; the number of incidents, lost workdays and any trends identified will be noted. Trends such as accident type, particular occupation, shift, seniority level, etc., will help the committee focus efforts on prevention issues.

Employee Participation

 **PUTZHEIM CRESCENT INCORPORATED** requires employee participation in all safety activities to include: inspection of equipment and worksite conditions, employee training sessions, workplace hazard improvement suggestions and other safety-related activities. Supervisors will review accidents with employees for educational purposes. Following an accident, assignments such as repairing equipment will be made by the supervisor.

Incentive Programs

To prove our commitment to safety, when established goals have been met by company employees,  **PUTZHEIM CRESCENT INCORPORATED** will recognize these efforts with incentives.

Examples of Safety Incentives:

Group (company) incentive—This incentive is for the entire group to work toward and should be tied to results. When the group reaches the desired goal, a small (\$5-10 per person) award should be given. The purpose of the first part of the incentive package is to recognize the overall safety efforts of the organization and to reward the group for obtaining the goal. Possible results to measure include:

- Number of lost time claims
- Lost workday rate
- Injury rate
- Illness rate
- Total number of claims

Award ideas (obtain employee suggestions too):

- T-shirts
- Donuts and coffee
- Pizza lunch
- Hat
- Gift certificates
- Patches
- Employee can come in late, leave early or have an extended lunch.

Individual incentive—This incentive is designed to recognize and reward individuals for safe behavior. This incentive requires observations by supervisors and other employees. Rewards are determined based on a point system. Possible observations:

- Prompt reporting of an accident or injury
- Wearing personal protective equipment
- Making a safety observation (way to improve process or safe behavior of another employee)

Points will be awarded based on the importance of the observed behavior and can range from 1 to 10 points. The rewards are based on the total accumulated points during a specified time period. Possible rewards:

- 10 points—\$5 Blockbuster movie card
- 15 points—Free lunch
- 20 points—\$20 gift card
- 25 points—Jacket
- 50 points—Winter jacket
- 100 points—Day off

Drug and Alcohol Program

Chapter 1—Summary of Recommendations For a Drug-Free Workforce

Employee Awareness and Education—Provide a drug orientation program to advise all employees of your organization’s policies and the drug-and-alcohol-related economic, health and legal liabilities that brought about the policy. Ongoing educational efforts to inform employees about the negative consequences of drug and alcohol abuse are also essential in changing their attitudes about the problem. This can be accomplished with meetings, brown bag lunches, and educational handouts.

Supervisor Training—Offer supervisors substance abuse training so those closest to the problem can be coached on the signs, symptoms, behavior changes, performance problems and intervention concepts that accompany drug and alcohol abuse.

Drug and Alcohol Testing—Consider a drug and/or alcohol testing program to detect and deter drug and/or alcohol use or abuse. If testing is adopted, it should conform to proper procedures.

Sanctions—Determine the consequences for those who violate the policy. Will employees be terminated or offered rehabilitation? If the latter, will it be offered as a only one-time basis? Who will be responsible for the cost of the program, you or the employee? Differentiate among penalties for various policy violations. For example, most employers terminate employees who are involved in drug trafficking in the workplace, even though the employee is a drug user who would otherwise be a candidate for treatment.

Appeals Process—Include an appeals process in the program, and clearly define it in the policy. Employees who disagree with positive drug test results should be allowed an opportunity to request a second test at their own expense. The second test should be conducted on the original urine sample or the second half of the original sample that was split for the specific purpose of a second test. A new urine sample should never be taken, since some drugs pass through the system quite rapidly and may be present one day and absent the next.

Evaluation—Monitor cost effectiveness and success of the program.

Chapter 2—Policy Summary

You have but two policy options for dealing with drug-free and/or alcohol-abusing employees. You can ignore the issue, *or* you can devise and implement a substance abuse prevention program. In pursuing the latter, you must determine your goals for the program and consider what restrictions on drug and

alcohol use will be asked of employees and what will be done when an employee is found to be in violation of the policy.

In the interest of fairness and good business practice, it is wise to create a written policy statement and announce it to the workforce before initiating any drug and alcohol program. The document should be clear, acknowledged in writing by each employee and applied in a fair and consistent manner. Any drug prevention technique (searches, urinalysis, etc.) should be described in the policy statement along with any adverse personnel actions or mandatory treatment requirements that would be levied against violators.

Details

The first and most important step in a drug-free and/or alcohol-free workplace program is to develop a policy that makes your position about drug and alcohol use in the workplace very clear. You have clear guidelines on attendance, performance, conduct, and even smoking in the workplace; why shouldn't you also have a policy that tells employees not to be present at work with drugs or alcohol in their systems?

Such a policy should also have reasonable business objectives. You should provide notice of the violations that will result in disciplinary action. The policy should be written, acknowledged in writing by all employees, and prominently displayed for a reasonable period before instituting it.

At a minimum, the following elements need to be addressed in the policy statement:

- Your overall position on drug and alcohol abuse (e.g., drug and/or alcohol abuse is a medical problem, often a legal problem, but always unacceptable in the workplace).
- Your position on the consequences for an employee using, selling, or possessing drugs or alcohol in the workplace (discipline, termination, due process, etc.).
- Your position on job performance as it relates to drug and alcohol use.
- Your position on safety of the public, your clients, and the abuser's co-workers as it relates to drug and alcohol use.
- Your position on treatment and rehabilitation services available to employees who have drug and/or alcohol problems, including who will be responsible for paying for such treatment.
- The responsibility of the employee to seek treatment.
- The need for strict confidentiality for employees who are in treatment, and procedures for dealing with any violation of confidentiality.
- How you will enforce the policy? For example, will supervisors be trained to conduct interventions? Will employees be subject to searches? Will drug and/or alcohol testing be included in the program? If testing is to be included, what types of testing will be conducted: random, post-accident, reasonable cause, post-rehabilitation or others.

The policy should define key terms such as "illegal drugs" and "post-accident testing." The policy should prohibit employees from "being at work with any detectable trace amount of drugs or alcohol in their system." The policy should refrain from prohibitions such as "being under the influence" or "impairment" since drug tests cannot establish either of these situations. A drug test can only detect the "presence" of a drug metabolite or the "presence" of alcohol.

Avoid mixing policy with procedures. Your policy should rarely change, but procedures can and probably will change periodically. Procedural issues should be defined in a separate document, not the policy.

If you plan to conduct drug and/or alcohol testing of employees and job applicants, that should be disclosed in your policy.

If you have an EAP, employees should be informed in the policy about the program and be encouraged to use it. The initiation of discipline following a drug or alcohol infraction, however, should not be postponed pending the employee's involvement in such a program.

Once a policy is adopted, all employees should know what is expected of them by the employer and what they can expect from the employer.

Steps in Policy Development

In preparation for developing a drug and alcohol prevention policy, the following steps should be considered:

- Commit your organization's senior managers to a drug-free workplace.
- Identify organizational indicators of substance-abuse-related liabilities such as increases in accidents, theft and property losses, security breaches, benefits utilization, absenteeism, training costs, and workers compensation claims.
- Obtain national, state and/or local statistics gathered by substance abuse agencies (health or law enforcement), medical or health societies, hospitals or treatment facilities, chapters of the National Council on Alcoholism and Drug Dependency, and business and industry or trade organization.
- Gather employees' views, formally or informally, as to whether drug or alcohol use is present and whether it is undermining health, safety, security, or other aspects of work activity. Ask for input from employees on the best way to implement a drug-and-alcohol-free workplace program.
- Call together representatives of key units within your organization, such as occupational safety and health, security, employee benefits, personnel and the EAP to get a company-wide sense of the problem; employee representatives should be part of the process.
- Compare hard data with subjective views to get some idea of the productivity toll exacted by drugs and alcohol.
- Decide whether drug and/or alcohol testing will be a part of your program and when, how, and for whom testing will be administered (e.g., job applicants, all employees, employees in jobs involving safety or security, employees who have had accidents), whether testing will be periodic and announced or random and unannounced.
- Determine what disciplinary measures (e.g., dismissal, suspension, demotion, transfer) you will take against employees who violate the policy.
- Determine what the appeals process will be for employees who wish to appeal positive tests and resulting discipline.
- Recognize that alcohol abuse and illegal use or misuse of prescription drugs are major drug abuse problems, just like illegal drug use, and need to be addressed comprehensively also.
- Estimate the costs of employee assistance and rehabilitation programs as they relate to health insurance, workers compensation and unemployment.

- Ask your health insurance agent about coverage for alcohol and other drug-related problems for your employees and their family members.

Drafting the Policy

Once you have a clear idea of what you expect from your drug and alcohol prevention policy, you should:

- Draft a preliminary policy on drug and alcohol abuse in the workplace.
- Coordinate your policy and program internally with those individuals responsible for labor relations, personnel, medical care, security, public affairs, and occupational safety and health.
- Ensure legal counsel clears the policy's substance and language to ascertain that it:
 - Is consistent with other corporate policies
 - Complies with relevant federal, state and local laws regarding drug and alcohol testing
 - Reduces your vulnerability to legal challenges
- Collectively bargain with your union or employee association representatives, if any, regarding your intent to implement a drug-and-alcohol-abuse prevention policy and program (especially regarding testing, which is mandatorily subject to collective bargaining), and enlist their cooperation and support.
- Issue a formal, written policy statement on drug and alcohol abuse that explains:
 - Your commitment to a drug-free workplace
 - Under what circumstances, if any, drug and/or alcohol testing will be conducted
 - The consequences of refusing to be tested
 - The consequences of violating the policy
 - The fact that law enforcement officials will be contacted when appropriate regarding the use, sale, purchase or possession of illegal drugs on the job

Enforcing the Policy

Proper enforcement of the policy is essential. Otherwise, the policy is just a piece of paper. Some basic rules of policy enforcement include:

- Enforce the company policy consistently. Be prepared to make the same response when a "positive" drug or alcohol test is confirmed for a long-term, highly placed employee whose performance is marginal as you would for a short-term or "non-essential" employee.
- Maintain thorough, secure and confidential records for drug and alcohol test results and for drug-and/or-alcohol-related accidents or incidents. The best defense to a legal challenge to disciplinary action based on drug or alcohol abuse, and an important safeguard for protecting innocent employees, is documentation.
- Show full support for supervisors. This will:
 - Demonstrate the commitment to and seriousness of the company's policy
 - Assure supervisors and employees that they should cooperate in efforts to identify those employees who violate the law and the company's policy
 - Deter further violations
- Discipline supervisors who, in administering and enforcing the company's substance abuse prevention program, abuse their power, harass employees, lie, do not take action when violations are committed, or otherwise act in bad faith. Employees must be shown that the company's prevention program is fair and consistent in order to assure meaningful cooperation and maintain positive morale.

- Some drug detection techniques should be used only when necessary to address severe drug selling or abuse problems. Use discretion in:
 - interviewing and employing
 - locker, office, or vehicle searches
 - hidden cameras
 - undercover operations
 - dogs trained to detect drugs
 - other vigorous surveillance and detection techniques

Law enforcement officers can advise you on the best way to proceed.

Issues to Consider in a Policy

Testing

Many employers include provisions for various forms of testing in their substance abuse prevention policies. Many employers consider testing an excellent tool for both detecting and deterring drug and alcohol abuse. Alcohol tests may analyze a subject's breath, blood or saliva. When testing for drugs other than alcohol, urine samples are typically utilized, although some employers test hair samples.

Regardless of which drugs you test for, follow these basic guidelines:

- Testing is only one aspect of a comprehensive strategy to prevent substance abuse in the workplace.
- Contract with a reliable, professional testing service that will assure quality control and chain-of-custody for test samples. Ensure that the personnel providing the services are trained and that the manufacturer's instructions for testing apparatus are followed to the letter. It is also advisable to use a service that has professionals qualified and available to serve as expert witnesses.
- Implement testing in as fair, accurate and legally defensible a manner as is reasonable considering your company's situation. Extreme caution must be used to assure that the collection, handling and testing procedures are reliable and accurate and to prevent misidentification. Because relevant laws are constantly changing, consult with legal counsel before implementation.
- Provide job applicants a copy of your policy that defines the company's requirements for drug and/or alcohol testing of employees. Request that applicants acknowledge in writing at the time of hire their recognition that participation in the company's testing program is a condition of continued employment. Place the signed acknowledgement form in their permanent personnel file.
- Split urine specimens into two samples so that a second test can be performed using the same specimen when the first test is positive for drugs.
- When an employee's sample tests positive, before taking disciplinary action, have a second test performed using the gas chromatography/mass spectrometry (GC/MS) method. While other methods are acceptable and standard for the initial screening process, GC/MS is the *only* legally defensible testing method and should *always* be used for confirming positive results.
- Require that the testing laboratory retain positive test samples as evidence, preserving refrigerated samples for at least one year as a legal precaution. If a legal claim arises on a particular sample, ensure that the laboratory retains it until the dispute is completely resolved.
- Make every effort to observe reasonable employee expectations of privacy and confidentiality.

- Provide timely and complete notification to employees who test and retest positive for drugs, informing them of the test results and what they mean.

Rehabilitation

All workplace substance abuse prevention policies should include consequences for violations of the policy. Some employers terminate violators, others suspend them and still others offer rehabilitation for employees whose violations do not include serious misconduct such as violent behavior, trafficking or possession of large amounts of drugs. Most employers allow for voluntary self-referral to rehabilitation, not related to an employee being detected as being in violation of the policy. Some states require employers to offer violators' rehabilitation instead of termination. It is important to learn what requirements, if any, exist in your state.

It is also important for an employer to recognize that the identification of a drug problem is only the first step in a long process that optimistically should end in rehabilitation of the employee. In achieving this goal, employers should consider these issues:

- Provide the opportunity, when feasible and appropriate, for employees who test “positive” to participate in company-sponsored employee assistance and rehabilitation programs. These programs should be state or nationally certified and should include medical monitoring, treatment, re-testing and counseling.
- Provide referrals to local counseling and treatment centers for employees with substance abuse problems as an alternative to, or as a supplement for, company EAPs.
- Insist on a high level of accountability for employees in company-sponsored or company-referred drug rehabilitation programs. Make such programs available only to those employees who acknowledge the existence of a substance abuse problem and demonstrate a desire to deal with their problem. Stress that strict adherence to the requirements of the program and random retesting are the only alternatives to their dismissal.
- Address the problems of the families of employees who are substance abusers, emphasizing group, family, personal and outpatient counseling.
- Require individuals to test negative before returning to work after rehabilitation, and require them to participate in a post-rehabilitation testing program wherein they are tested frequently and randomly to monitor their abstinence.
- Insist on regular participation in an after-care program to prevent relapse.

Chapter 3—Steps in Policy Development

Preparing for the Policy

In preparation for developing a drug and alcohol prevention policy, the following steps should be considered:

- Commit your organization's senior managers to a drug-free workplace;
- Identify organizational indicators of substance-abuse-related liabilities such as increases in accidents, theft and property losses, security breaches, benefits utilization, absenteeism, training costs, and workers compensation claims;
- Obtain national, state and/or local statistics gathered by substance abuse agencies (health or law enforcement), medical or health societies, hospitals or treatment facilities, chapters of the National Council on Alcoholism and Drug Dependency, and business and industry or trade organizations;

- Gather employees' views, formally or informally, as to whether drug or alcohol use is present and whether it is undermining health, safety, security, or other aspects of work activity; ask for input from employees on the best way to implement a drug-and-alcohol-free workplace program;
- Call together representatives of key units within your organization, such as occupational safety and health, security, employee benefits, personnel and the EAP to get a company-wide sense of the problem; employee representatives should be part of the process;
- Compare hard data with subjective views to get some idea of the productivity toll exacted by drugs and alcohol;
- Decide whether drug and/or alcohol testing will be a part of your program and when, how, and for whom testing will be administered (e.g., job applicants, all employees, employees in jobs involving safety or security, employees who have had accidents), whether testing will be periodic and announced or random and unannounced;
- Determine what disciplinary measures (e.g., dismissal, suspension, demotion, transfer) you will take against employees who violate the policy;
- Determine what the appeals process will be for employees who wish to appeal positive tests and resulting discipline;
- Recognize that alcohol abuse and illegal use or misuse of prescription drugs are major drug abuse problems, just like illegal drug use, and need to be comprehensively addressed also;
- Estimate the costs of employee assistance and rehabilitation programs as they relate to health insurance, workers compensation and unemployment;
- Ask your health insurance agent about coverage for alcohol and other drug-related problems for your employees and their family members.

Drafting the Policy

Once you have a clear idea of what you expect from your drug and alcohol prevention policy, you should:

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- Coordinate your policy and program internally with those individuals responsible for labor relations, personnel, medical care, security, public affairs, and occupational safety and health;
- Ensure legal counsel clears the policy's substance and language to ascertain that it:
 - Is consistent with other corporate policies;
 - Complies with relevant federal, state and local laws regarding drug and alcohol testing;
 - Reduces your vulnerability to legal challenges;
- Collectively bargain with your union or employee association representatives, if any, regarding your intent to implement a drug-and-alcohol-abuse prevention policy and program (especially regarding testing, which is mandatorily subject to collective bargaining), and enlist their cooperation and support;
- Issue a formal, written policy statement on drug and alcohol abuse that explains:
 - Your commitment to a drug-free workplace;
 - Under what circumstances, if any, drug and/or alcohol testing will be conducted;
 - The consequences of refusing to be tested;
 - The consequences of violating the policy; and
 - The fact that law enforcement officials will be contacted when appropriate regarding the use, sale, purchase, or possession of illegal drugs on the job.

Enforcing the Policy

Proper enforcement of the policy is essential. Otherwise, the policy is just a piece of paper. Some basic rules of policy enforcement include:

- Enforce the company policy consistently. Be prepared to make the same response when a “positive” drug or alcohol test is confirmed for a long-term, highly placed employee whose performance is marginal as you would for a short-term or “non-essential” employee.
- Maintain thorough, secure and confidential records for drug and alcohol test results and for drug-and/or-alcohol-related accidents or incidents. The best defense to a legal challenge to disciplinary action based on drug or alcohol abuse, and an important safeguard for protecting innocent employees, is documentation.
- Show full support for supervisors. This will:
 - Demonstrate the commitment to and seriousness of the company’s policy;
 - Assure supervisors and employees that they should cooperate in efforts to identify those employees who violate the law and the company’s policy; and
 - Deter further violations.
 - Discipline supervisors who, in administering and enforcing the company’s substance abuse prevention program, abuse their power, harass employees, lie, do not take action when violations are committed, or otherwise act in bad faith. Employees must be shown that the company’s prevention program is fair and consistent in order to assure meaningful cooperation and maintain positive morale.
 - Some drug detection techniques should be used only when necessary to address severe drug selling or abuse problems. Use discretion in employing:
 - a) locker, office, or vehicle searches;
 - b) hidden cameras;
 - c) undercover operations;
 - d) dogs trained to detect drugs; or
 - e) other vigorous surveillance and detection techniques.

Law enforcement officers can advise you on the best way to proceed.

Issues to Consider in a Policy Testing

Many employers include provisions for various forms of testing in their substance abuse prevention policies. Many employers consider testing an excellent tool for both detecting and deterring drug and alcohol abuse. Alcohol tests may analyze a subject’s breath, blood or saliva. When testing for drugs other than alcohol, urine samples are typically utilized, although some employers test hair samples.

Regardless of which drugs you test for, follow these basic guidelines:

- Testing is only one aspect of a comprehensive strategy to prevent substance abuse in the workplace.
- Contract with a reliable, professional testing service that will assure quality control and chain-of-custody for test samples. Ensure that the personnel providing the services are trained and that the manufacturer’s instructions for testing apparatus are followed to the letter. It is also advisable to use a service that has professionals qualified and available to serve as expert witnesses.
- Implement testing in as fair, accurate, and legally defensible a manner as is reasonable considering your company’s situation. Extreme caution must be used to assure that the collection, handling, and testing procedures are reliable and accurate and to prevent

misidentification. Because relevant laws are constantly changing, consult with legal counsel before implementation.

- Provide job applicants a copy of your policy that defines the company's requirements for drug and/or alcohol testing of employees. Request that applicants acknowledge in writing at the time of hire their recognition that participation in the company's testing program is a condition of continued employment. Place the signed acknowledgement form in their permanent personnel file.
- Split urine specimens into two samples so that a second test can be performed using the same specimen when the first test is positive for drugs.
- When an employee's sample tests positive, before taking disciplinary action, have a second test performed using the gas chromatography/mass spectrometry (GC/MS) method. While other methods are acceptable and standard for the initial screening process, GC/MS is the **only** legally defensible testing method and should **always** be used for confirming positive results.
- Require that the testing laboratory retain positive test samples as evidence, preserving refrigerated samples for at least one year as a legal precaution. If a legal claim arises on a particular sample, ensure that the laboratory retains it until the dispute is completely resolved.
- Make every effort to observe reasonable employee expectations of privacy and confidentiality.
- Provide timely and complete notification to employees who test and retest positive for drugs, informing them of the test results and what they mean.

Rehabilitation

All workplace substance abuse prevention policies should include consequences for violations of the policy. Some employers terminate violators, others suspend them, and still others offer rehabilitation for employees whose violations do not include serious misconduct such as violent behavior, trafficking or possession of large amounts of drugs. Most employers allow for voluntary self-referral to rehabilitation, not related to an employee being detected as being in violation of the policy. Some states require employers to offer violators rehabilitation rather than termination. It is important to learn what requirements, if any, exist in your state.

It is also important for an employer to recognize that the identification of a drug problem is only the first step in a long process that optimistically should end in rehabilitation of the employee. In achieving this goal, employers should consider these issues:

- Provide the opportunity, when feasible and appropriate, for employees who test "positive" to participate in company-sponsored employee assistance and rehabilitation programs. These programs should be state or nationally certified and should include medical monitoring, treatment, re-testing, and counseling.
- Provide referrals to local counseling and treatment centers for employees with substance abuse problems as an alternative to, or as a supplement for, company EAPs.
- Insist on a high-level of accountability for employees in company-sponsored or company-referred drug-rehabilitation programs. Make such programs available only to those employees who acknowledge the existence of a substance abuse problem and demonstrate a desire to deal with their problem. Stress that strict adherence to the requirements of the program and random retesting are the only alternatives to their dismissal.
- Address the problems of the families of employees who are substance abusers, emphasizing group, family, personal, and outpatient counseling.

- Require individuals to test negative before returning to work after rehabilitation, and require them to participate in a post-rehabilitation testing program wherein they are frequently randomly tested to monitor their abstinence.
- Insist on regular participation in an after-care program to prevent relapse.

Disciplinary Action

Violations of substance abuse prevention policies frequently lead to disciplinary action against the violators. Some guidelines for initiating disciplinary action are:

- Document as fully as possible the relationship between declining job performance and substance abuse before taking disciplinary action against employees. This is especially important for employees in jobs involving either:
 - Minimal risk to the safety of the public or co-workers
 - Little need for public trust
 - No access to substantial amounts of cash or valuables
- Dismiss chronic abusers who:
 - Are unable or unwilling to rehabilitate
 - Are unable to perform their duties because of impairment or incapacity due to illegal drug use
 - Have been apprehended selling drugs illegally on the job
- Establish a mechanism for a quick and fair review of employee complaints and resolution of grievances filed by employees who are discharged, suspended, demoted or transferred for violation of the company's substance abuse policy.
- Monitor legislative and legal developments and revise your company's substance abuse prevention program accordingly regarding relevant:
 - Federal, state and local legislation
 - Special requirements imposed on federal contractors by the U.S. Congress
 - Special requirements imposed on private contractors by their clients
 - National Labor Relations Board decisions
 - Arbitration rulings
 - Court decisions regarding the employment-at-will doctrine and its relationship to employees discharged for on-the-job substance abuse

It is important to evaluate, periodically and at the senior management level, how well your program's and policies' objectives are being achieved. Make changes where necessary and appropriate.

Chapter 4—Employee Education, Training and Communication

Summary

Once your policy has been finalized, it should be implemented with your workforce. To effectively implement the program, you should take these important steps:

- Distribute the policy to all employees.
- Post notifications of your drug-free workplace program well in advance of implementation.
- Educate your employees about the program.

Educating your employees about drug and alcohol abuse is important. It gives the program a high priority and says that everyone in the organization needs to be involved. It fosters a spirit of cooperation. It helps to dispel myths about drug and alcohol abuse and acknowledges the impact of substance abuse

on friends, family members and co-workers. It encourages employees to accept the program and reinforces the importance of addressing drug and alcohol abuse in the workplace.

Details

Some basics for providing education, training and communication to your workforce about your company's drug and alcohol prevention policy include:

- Communicating your policy to employees through:
 - briefings
 - notices in company newsletters
 - notices in paycheck envelopes
 - notices on company bulletin boards
 - letters from the company president or plant manager
- Informing employees of the reasons for the policy, recognizing the success of the program is dependent upon its acceptance by the employees and job applicants themselves.
- Making being drug and alcohol free a condition of employment and informing job applicants and employees of that through statements on job applications and in employee handbooks.
- Applying, to the extent permissible and appropriate, company policies to temporary or subcontractor employees when they are on company premises. This includes temporary secretarial, security, delivery, and janitorial personnel. Provide notice to both the employees and their employers.
- Educate employees about the dangers of drug abuse through:
 - Lectures for employees and family members by experts in the community;
 - Films
 - Brochures
 - Fact sheets to stress prevention of drug and alcohol abuse through education and awareness
- Inform employees of any available EAP or other resources within the organization or in the community for getting help with a substance abuse problem.
- Designate a contact person with whom employees can discuss drug and alcohol abuse concerns regarding themselves or their fellow workers. Inform employees of how, where and when this person can be reached, and make this contact person regularly and readily available. Keep the lines of communication open, and recognize the importance of employee suggestions and feedback to the program.
- Require employees in jobs involving safety or security, who legally are using prescription drugs for medical conditions that could impair their performance, to ensure through their prescribing physicians that they are "fit for duty" and capable of performing in a safe manner.
- Inform employees that supervisors will be trained how to:
 - Detect the symptoms of drug and alcohol abuse identify patterns of performance frequently related to drug and/or alcohol abuse
 - Identify illegal drugs and drug paraphernalia
 - Respond to crisis situations, such as receiving reports of illegal drugs in plain view or being confronted by an employee who is obviously under the influence of drugs or alcohol and may need to be restrained or medically assisted
 - Document performance and behavior indicators that may be linked to substance abuse Intervene on behalf of troubled employees
 - Refer employees to resources for help

- Cooperate with local police regarding criminal investigations.
- Support community drug abuse prevention programs to:
 - Demonstrate to employees and the public your company's commitment to combating drug and alcohol abuse.
 - Assume a positive civic responsibility, including involvement in, support of and contributing to drug education and awareness programs at local schools and colleges.
- Consider extending the education to employees' family members, including providing parenting programs.

When weighing employee assistance programs and treatment options, consider the following suggestions:

- Recognize that the identification of a drug or alcohol abuse problem is only the first step and that rehabilitation is the ultimate and most desirable goal. Provide the opportunity, when feasible and appropriate, for employees who test positive to participate in company-sponsored employee assistance and rehabilitation programs. Ensure that the programs include medical monitoring, treatment, re-testing, counseling, and after-care.
- Provide employees with referrals to local counseling and treatment centers as an alternative to, or as a supplement for, company employee assistance programs.
- Insist on a high level of accountability for employees in company-sponsored or company-referred drug rehabilitation programs. Make such programs available only to those employees who acknowledge the existence of a drug and/or alcohol problem. Stress that strict adherence to the requirements of the program and random retesting are the only alternatives to dismissal.
- Address the family and dependent problems of employees who are drug abusers, with emphasis on group, family, personal and outpatient counseling.

Chapter 6—Drug Testing

Summary

Tests to detect drug use can be conducted using various biological specimens. Testing for alcohol is typically conducted by obtaining a breath, blood or saliva sample. However, when a person is being monitored following treatment for alcoholism, and abstinence is expected, urine may be tested. Testing for drugs other than alcohol is typically conducted using urine samples, although some employers have used hair samples. Employers regulated by federal testing programs are required to use urine samples only for testing of drugs. Department of Transportation regulations require breath testing for alcohol.

Most employers test applicants and employees in one or more of the following situations:

- During an annual physical
- Before promotions or transfers
- Before being placed in--or routinely while in--positions involving money, security, or safety
- After accidents
- For past users
- Following treatment
- When referred by management through just cause or reasonable suspicion
- On a random basis

In conducting drug testing, employers must balance legal liabilities due to lawsuits (brought by unhired applicants and employees who refuse to take the test or who are discharged or disciplined for positive

test results) against the well-being of customers, clients, fellow employees, and members of the general public who may be injured or affected by a drug-using employee. Settlements in the former category are usually in the low thousands of dollars, while those in the latter are often in the millions.

Courts are holding more and more companies responsible for mistakes made by poorly trained personnel operating without well-conceived guidelines. As courts have declared, *there is enormous liability when a company does nothing or does the wrong thing in the face of the clear evidence of drug and/or alcohol abuse throughout the workplaces of our country.*

Many states have drug testing laws that determine what an employer can and cannot do. It is important that employers determine what laws, if any, exist in the states where they conduct business to ensure that the testing rules and procedures established are in compliance with state regulations.

Chapter 7—Supervisory Training Summary

After developing a policy statement, a company may wish to offer supervisory training to those closest to the workforce, including information about drugs and alcohol, drug paraphernalia, signs and symptoms of usage, and performance deterioration signals. Training enables supervisors to properly establish reasonable suspicion before referring employees for testing and aids in the implementation of a drug and alcohol abuse prevention program.

All supervisors should be provided with basic information about their employer's prevention program and their role in carrying it out. At a minimum, this should include:

- The rationale and specific details of the program startup and implementation.
- The supervisor's specific responsibilities.
- Ways to recognize and deal with employees who have job performance problems that may or may not be related to drugs or alcohol, including personal and family problems.

Training programs for supervisors need not be more than half a day and can be performed by outside instructors or law enforcement personnel specially trained in workplace drug abuse programs. All training should be documented.

Details

Drug and alcohol abusers can be spotted by observing them directly, by identifying associated drugs and paraphernalia, and by reviewing performance. Direct observation can reveal physical and/or behavior changes, mood swings and long-term changes in personality or physical appearance. It should be stressed that even the best trained supervisor is working with subjective clues and therefore may not notice a drug or alcohol abuser until he or she is well along the path of chemical dependency.

Literally hundreds of drugs are abused, ranging from clearly illegal substances with no medical value, like heroin, to prescription drugs and alcohol, which are ingrained in society. However, all drugs fall into three categories: stimulants, depressants and hallucinogenics—or combinations thereof—each with revealing telltale signs depending on when in the use cycle an observation is made. The three most troublesome drugs in the workplace are alcohol, marijuana and cocaine.

An employer should not focus on discovering “alcoholics,” “cocaine abusers” or “potheads” but rather on identifying a broad category of “substance abusers.” Thus, a supervisor should not be expected to be

an amateur diagnostician but rather should concentrate on a general approach of whether chemicals may be interfering with the performance of those working under his or her supervision.

One way of spotting problem employees is based on the fact that people who abuse drugs or alcohol, either at work or off the job, perform differently from those who do not live a drug- or alcohol-abusing lifestyle. And those differences can be measured either by observation or with the aid of an electronic database.

Note the performance indicators of a drug- or alcohol-abusing employee:

- Late to work three times more often
- Requests early dismissal or time off 2.2 times more often
- Uses three times more sick leave
- Is five times more likely to file worker compensation claims
- Is 3.6 times more likely to have an accident at work and 9 times more likely to have a domestic or car accident away from work
- Has inconsistent work quality and lowered productivity
- Makes more mistakes, is careless and makes judgment errors
- Has mood swings that, over several days, seem to occur at similar times of the day
- Is overly reactive to supervisory admonishments or compliments
- Deliberately avoids co-workers and supervisors, especially supervisors who have been trained to spot abusers
- Has deteriorating personal appearance, hygiene and ability to get along with co-workers
- Inspires poor morale and reduced productivity among co-workers as a result of their “covering” for the abuser or their frustration with management ignorance of or inaction to what they perceive to be an obvious drug and/or alcohol problem
- Takes needless risks in an attempt to raise productivity after supervisory admonishments
- Carelessly handles and/or maintains machinery, equipment or office supplies
- Disregards co-workers’ safety
- Increasingly complains about problems at home or with family or friends
- Has frequent and recurring financial problems, including borrowing from co-workers or supervisors to “get to payday”

Close observation and documentation of the signs of drug and alcohol abuse should be asked only of supervisors who have had training in such techniques. A clear policy statement in combination with training of supervisors will allow for the identification and intervention of drug and/or alcohol dependent workers in a manner consistent with law and good personnel practices.

Chapter 8—Legal Issues

Summary

Ignoring the drug problem in the corporate setting can bring legal problems. Conversely, reasonable and well-intended drug prevention programs may also be challenged in arbitration or court. However, experience reveals a relatively large legal exposure by waiting to address the issue (reactive) versus potentially small penalties in trying to mitigate the problem of drugs and alcohol in the workplace (proactive). Ultimately an employer must decide the potential legal costs from instituting a prevention

program and the occasional legal challenge from an affected employee versus potentially much larger losses from not instituting a program.

Details

Legal action related to maintaining a drug-free workplace has so far been concentrated in the following six areas:

- Right to privacy
- Freedom from unreasonable searches
- Due process
- Negligence (including negligent hiring, supervision, libel and slander)
- Contract law
- Discrimination (including racial, sexual, and disabilities)

Cases brought under the first three categories usually involve public employment, although there have been exceptions. Private companies need not be as concerned about those issues if they already exercise good personnel practices. However, the last three--negligence, contracts, and discrimination--clearly apply equally to all employers.

While an employer cannot be guaranteed protection from legal challenge, some things can be done to minimize successful legal challenges:

- Inform employees that drug use on or off the job is a concern. Write your policy to prohibit employees being at work with “any detectable trace amount of drugs or alcohol in their system,” not “under the influence” or “impaired.” Drug tests detect “presence,” not “impairment.”
- Intra-company communications concerning current employees’ performance, conduct or problems should be treated with appropriate confidentiality. Only management personnel with a “need to know” the particular situation should be involved. Additionally, managers must be consistent and thorough in documenting employee performance, investigations, and workplace observations.
- Minimize negligent hiring by requiring all job applicants to pass a drug test prior to being hired.
- Minimize negligent retention by routinely testing employees and being prepared to intervene when a worker is identified as having, or shows signs indicative of, substance abuse problems.
- Minimize negligent testing by adhering to the testing standards established by the U.S. Department of Health and Human Services.
- Conduct personal searches only on a limited basis, and obtain clear documentation of employee consent prior to conducting a search.
- Ensure that workers are not, or do not perceive that they are, being detained against their will in any workplace investigations of suspected drug or alcohol use or possession.
- Minimize breach of contract and wrongful discharge claims by following established policies and revising policies that lack sufficient flexibility to deal effectively with various confrontational situations.
- Establish your drug- and alcohol-free workplace policy in writing, and ensure that all employees receive and acknowledge (in writing) receiving a copy of it.

Chapter 10—Evaluation

Summary

Program evaluation is an important part of any drug-free workplace program. Periodic evaluation lets you know if you are saving money and improving your bottom line. It also helps to ensure that you are meeting your goals of a drug- and alcohol-free workplace.

Details

You can evaluate your program in several ways. Some employers hire a consultant, while others elect to conduct their own evaluations. For organizations with limited resources, self-evaluation is the most likely option. Use the following guidelines to conduct a basic evaluation of your program.

Step One

Establish a baseline. In other words, assess your organization as it is today. Specifically check your company records for the past two years, and compute the incidence and prevalence of some, or all, of the following indicators of drug and/or alcohol abuse:

- absenteeism
- tardiness
- use of health care benefits
- workers compensation claims
- theft
- accidents
- turnover

Estimate the costs of these factors in dollars, if possible. If records are not available for years past, start tracking the trends now. Also, talk to employees at all levels of the organization to assess the current overall morale of the staff. This will give you baseline data for determining the impact of your program during the coming years.

Step Two

If you have not already begun your drug- and alcohol-free workplace program, do it now.

- Review the records at the end of the first year (and in subsequent years) for the factors listed above.
- Reassess employee morale.
- Compare the results to your baseline data. Have there been any changes?

Step Three

Revisit your original goals to determine the success of your program. Ask employees and supervisors for their feedback on the impact of the policy and/or program. Cost savings may take some time to accrue, but improved employee morale may be evident right away.

Step Four

Establish a plan for assessing the cost/benefits of continuing your drug- and alcohol-free workplace program.

Step Five

Use the results to modify your program. Establish a regular review period, perhaps annually, and use that time to assess the progress of the program.

- Determine the steps needed in the next year to reach your program goals.
- Consider speaking with employees at all levels of the workforce to assist in both the ongoing evaluation and the implementation of program changes.

It is important when evaluating your program, that you consider any changes in laws, established procedures and accepted practices in this area, *and* that you make needed changes.

Chapter 11—Seven Points to Remember

The seven points listed below are steps that should be followed when implementing and maintaining a drug- and alcohol-free workplace program. Although they may seem obvious, some employers have neglected one or more and later regretted their omissions.

- Keep written records that objectively document suspect employee performance. These can be used as a basis for referral for testing.
- Know your employees. Become familiar with each one's skills, abilities, and normal performance and personality.
- Become familiar with common symptoms of drug use.
- Document job performance regularly, objectively and consistently for all employees.
- Take action whenever job performance fails, regardless of whether drug or alcohol use is suspected.
- Know the exact steps to be taken when an employee has a problem and is ready to go for help.
- Communicate immediately with your supervisor when you suspect a problem, and have a witness to your action when confronting an employee.

Chapter 12—Eleven Mistakes to Avoid

Here are some things to avoid when implementing and maintaining a drug- and alcohol-free workplace program:

- Don't misuse the drug prevention program to discipline employees for problems not related to the program.
- Don't single out any employee or group of employees for scrutiny under the company's policy. Too much attention to any one group could leave the company/organization liable for charges of discrimination. Be consistent with all employee groups or classes.
- Don't confront a suspected drug dealer alone. Always have a witness to your actions. Consult local law enforcement for advice or assistance in these cases.
- Don't assume anyone in your organization is immune to the problem of drug and alcohol abuse.
- Don't implement a verbal policy. An effective policy must be written, circulated and acknowledged (in writing) by employees.
- Don't treat employees who test positive differently. All employees who test positive must be treated consistently to maintain the integrity of the program.
- Don't take action against employees based only on the positive results of a drug screen. Always obtain the results of a gas chromatography/mass spectrometry (GC/MS) confirmation before taking action.
- Don't offer rehabilitation selectively.
- Don't address drug abuse without including alcohol abuse in the policy.

- Don't implement a policy and program unilaterally if you have a unionized workforce. The National Labor Relations Act requires that working terms and conditions be included in your bargaining agreement, and a drug program falls into that requirement.
- Don't forget that the majority of the nation's workforce is drug-free and does not abuse alcohol. They support you in your efforts to rid your company, neighborhood and ultimately your nation of the menace of drug and alcohol abuse.

Safety Program Goals

The safety program of  **PUTZHEIM CRESCENT INCORPORATED** is intended to:

1. Reduce the potential for human suffering as a result of an occupational accident or disease in the workplace.
2. Eliminate or control conditions that pose a threat to employee safety.
3. Control unsafe acts by employees through education and supervision.
4. Seek and appreciate employees' communication of safety improvements in the workplace environment, processes, machinery and procedures.
5. Investigate all workplace accidents and provide corrective actions if possible.
6. Return the employee to work as soon as possible after an occupational injury or disease.
7. Reinforce management support for ongoing safety activities.
8. Audit and revise the safety program to meet changing circumstances, processes and machinery.
9. Meet the laws and regulations pertaining to employee safety.

Responsibilities

Owner, CEO or President

- Ensure managers and supervisors have all the financial, educational and administrative assets necessary to implement the company safety program.
- Provide the authority and ensure accountability to managers or supervisors for company safety activities.
- Ensure all laws and regulations are followed as required by authorities having jurisdiction.

Managers or Supervisors


- Ensure employees are aware of their job duties, safe work procedures and hazard recognition and mitigation.
- Ensure employees are following safe work procedures.
- Investigate and report all accidents to appropriate personnel.
- Maintain good communication with employees by encouraging safety improvement suggestions and safety committee participation.
- Communicate to management resources needed to improve workplace conditions.

All Employees

- Follow safe work procedures as taught by employer including maintaining good housekeeping, use of required personal protective equipment and following rules for a drug and alcohol free workplace.
- Report all unsafe action or conditions witnessed at the workplace.
- Report all accidents immediately to manager or supervisor.
- Participate in safety programs and committees as requested.

Education

Education and Training

In order to ensure employees are educated on job hazards, proper job operating procedures and required personal protective equipment,  **PUTZHEIM CRESCENT INCORPORATED** will train employees through various methods depending on the job task. These include: on the job training, job instructional training and regular reviews of safety topics. Training will be given to all new employees, employees transferring jobs or performing new tasks and as needed by best practices or to reinforce the employee's knowledge. Some duties that expose the employee to specific hazards have their own training requirements. These exposures and training requirements are outlined in Section C-Best Practices of this program. Examples include: confined space entry, handling hazardous chemicals and entering areas where harmful plants or animals are present.

New Employee Orientation Training

All employees will be given orientation training to include: review of the general company rules, reporting accidents, requirements for reporting unsafe conditions or actions and review of the drug and alcohol policy. Specific training will be provided to employees as it relates to their job duties. All training will be conducted prior to performing any work duties. The employee will acknowledge they received the training by signing the Orientation Training Checklist.

On-the-Job Training (OJT)

OJT will be performed as necessary. This training method is used for a job that can easily be demonstrated to the employee. The trainer will demonstrate the job and observe the employee performing the same operations. The employee will confirm their knowledge by safely performing the job.

Job Instructional Training (JIT)

Similar to On-The-Job Training, JIT utilizes training aids such as videos, handouts or equipment manuals. A detailed Job Safety Analysis may also be used for more hazardous jobs that require special training. This training process will be carried out as follows:

- Explain job steps. The trainer will determine how much is known about the job/task through discussion with the employee.
- The trainer will demonstrate the task while the employee watches and asks questions. All safety concerns and key points are emphasized at this time:
 1. Explain personal protective equipment, if required (e.g., gloves, safety glasses, face shield, etc.).
 2. Review equipment controls (e.g., gauges, speed controls, settings, emergency stops, etc.).
 3. Review materials, parts and tools
 4. Review safety devices (e.g., emergency stop buttons, guards, light curtains, etc.).
 5. Identify hazards associated with the job and individual tasks.

6. Review typical incorrect methods and unsafe practices.
 - The employee performs the task safely, under supervision of the trainer.
 - The trainer has the employee explain steps as the task is performed. This ensures the employee understands how and why the task is done safely and accurately.

Refresher Training

Training of employees can be performed at any time based on employee needs as determined by the supervisor. Accident trending, near miss incidents or as a means to heighten employee awareness based on observed behaviors, are all reasons for conducting training. OSHA and other governing agencies require formal beginning and refresher training of Best Practice programs. These training requirements will be covered in each Best Practice section of this safety program.

Employee Training Checklist

Employee Name _____ Employee I.D. No. _____

Department _____ Job Title _____

Supervisor _____ Hire Date _____

General Safety Training	Training Received On	Trainer
Company Safety Policy Statement and Safety Rules		
Review of Accident Reporting Procedures		
Review of Drug and Alcohol Policy		
Review of Incentive Program		
Review of Disciplinary Program		
Building Evacuation or Inclement Weather Procedures		

Job Specific Training	Exposure To Hazard		Training Received On	Trainer
	Yes	No		
Confined Space Entry				
Electrical Safety				
Safe Lifting/Material Handling				
Company Fleet Program				
Hearing Conservation				
Hazard Communication				
Fall Protection				
Emergency Action Procedures				
Use of Power Tools				
Use of Personal Protective Equipment				
Blood Borne Pathogens				
Trenching and Excavation				
Use of Specific Equipment _____				
Other _____				
Other _____				
Other _____				

I acknowledge the orientation training information listed above was provided to me. I have read and understand the information provided.

Employee Signature

Date

Employee ID No.

Training Coordinator

Date

Company Safety Rules

- Report all unsafe conditions and actions.
- Report all accidents or near-miss incidents to their supervisor.
- Do not bypass or disable a safety device or system.
- Only authorized and trained employees will operate company machinery and vehicles.
- Maintain good housekeeping in your area.
- Stairs, aisles and hallways must be kept clear of unnecessary litter or material.
- Use the appropriate tool for a job, as trained by your supervisor, JSA or manufacturers' instructions.
- Always wear personal protective equipment as required.
- Follow the safety policies and procedures as outlined in individual Best Practice Programs.
- Perform regular equipment and area inspections as required by supervisor.
- No use of illegal drugs or alcohol by the terms of the company's Drug and Alcohol policy.
- Employees taking physician-prescribed medication that might impair their ability to operate certain equipment or perform various job tasks safely must report this to their immediate supervisor prior to the start of work.
- No firearms shall be present on the property, including the parking lot or on the jobsite.
- Always wear your seatbelt while operating the company vehicles.
- Report all equipment maintenance issues to your supervisor.
- Dress appropriately for job duties.
- Refrain from horseplay that could endanger you or your co-workers.
- Never engage in hostile actions against other employees.
- Report all hostile actions of co-workers to your supervisor.
- Smoke in designated areas.
- Maintain good personal hygiene.

Job Safety Analysis

Date:	_____	Job:	_____
Supervisor:	_____	Job Title:	_____
Department	_____	Section:	_____
Analysis By:	_____	Reviewed By:	_____
Required and/or Recommended Personal Protective Equipment:		_____	
Approved By:		_____	

Sequence of Basic Job Steps	Potential Incidents or Hazards	Recommended Safe Job Procedures, Controls and PPE

Ergonomic Concerns:	
Safety Concerns:	
Industrial Hygiene Concerns:	

Job Safety Analysis—COMPLETED SAMPLE

Date:	4/9/05	Job:	Dry Line
Supervisor:		Job Title:	Mixer and Packing
Department:	Packaging	Section:	
Analysis By:	John Doe, Safety Coordinator	Reviewed By:	
Required and/or Recommended Personal Protective Equipment:		Steel toed boots, dust masks, gloves and back supports	
Approved By:			

Sequence of Basic Job Steps	Potential Incidents or Hazards	Recommended Safe Job Procedures, Controls and PPE
Mixer 1. Open duct slide to allow for appropriate ventilation.	None	None
2. Lift bag of dry ingredient from pallet (approx. 16-20 bags per batch each 50lbs.). Place on auger bin grate.	-Strains from improper lifting or twisting. -Abrasions to hands from lifting bag	-Lift bag near waist high. Pivot your entire body. Do not twist. - Back supports (optional) - Gloves (optional)
3. Cut back side of bag with box knife across the length of the bag.	Lacerations from the box knife	- Use self-retracting knives. - Do not store knives in your pocket.
4. When using Silica sand ingredient	Inhalation of silica sand. Industrial Hygiene testing indicated exposure level exceeding OSHA PEL.	-Respirator (mandatory)
5. When adding preservative.	Skin irritation	-Gloves (optional)
6. Start mixer.	None	None
Packer 1. Unfold bag, place on fill nozzle.	None	None

2. Pull filler lever, fill bag.	None	None
3. Pull filled bag onto cradle.	None	None
4. Fold tab and tuck into bag.	None	None
5. Stack bag on pallet.	-Strains from improper lifting or twisting. -Abrasions to hands	-Lift bag near waist high. Pivot your entire body. Do not twist. - Back supports (optional) - Gloves (optional)
6. Job tasks require continuous standing	Back and knee fatigue	- Use anti-fatigue mats. - Back supports (optional)

Ergonomic Concerns:	Lifting 50lbs in repetitive succession increases back strain potential. Training, job rotation and elevation of pallet to reduce lifting height are implemented.
Safety Concerns:	None
Industrial Hygiene Concerns:	Long term or excessive Silica exposure can produce respiratory disease.

Best Practices

Emergency Action

The purpose of this program is to ensure the protection of all employees in an emergency situation such as a tornado, hurricane, earthquake, severe storm, etc. The personal safety of each employee is and always will be of primary importance. The procedure should be reviewed for all main office locations. Additionally, training and planning should address employees who perform operations at construction locations. If operating as a subcontractor, Officer or company manager is responsible for employees should learn the emergency evacuation procedures for the host's location. This is critical if operating in a high hazard environment.

Responsibility

It is the responsibility of the management to protect their employees. The company safety officer or company manager is responsible for this program and has authority to make necessary decisions to ensure the success for this plan. Copies of the written program may be obtained from the main office. The Emergency Organization Plan responsibilities are documented in Appendix E.

Program Review and Update

The Emergency Action Program will be reviewed and/or updated under these circumstances:

- Annually, on or before (*22 October 2014*) of each year or
- When new equipment, facility construction or personnel changes might affect the program.

Emergency Escape Procedures

Emergency escape routes will be kept clear at all times. The escape routes and emergency procedures are documented in Appendix A. A copy of the escape route and emergency procedures will be posted on the employee bulletin board. This company also has designated safe areas for employees to report to in case of an emergency. Refer to Appendix B for designated safe areas.

Procedures for Critical Operations

Some operations in this company, in which control in an emergency situation is critical to the safety of employees, require special procedures for proper control (e.g., monitoring plan power, water supplies, or other essential operations). In these cases the following employees are responsible for these critical operations until their evacuation is necessary**:

Critical Operations

Name/Position	Critical Operation

**If at any time during an emergency situation the employees' safety is at risk, the critical operation procedures are to be abandoned and the employees are to proceed to a safe area.

Procedures to Account for Employees

Supervisors will be responsible to account for employees after an emergency evacuation and will be provided with a list of names of all the employees they are responsible for in their area. This list will be updated with each new employee hired and non-employees will be deleted.

The following employees will be responsible for conducting procedures to account for employees after the emergency evacuation. These procedures are designed to account for all employees, determine if an employee needs assistance in evacuation and to determine their location.

Account for Employees

Name/Position	Alternate	Department

Procedure for Reporting Emergencies

The quicker and more efficient emergencies are reported, the greater the chance for saving lives and property. The following is the procedure for reporting an emergency. This procedure will be posted on the employee bulletin board.

Reporting Emergencies

Emergency Situation	Reporting Procedures
Fire	
Tornado	
Fuel or Chemical Release	
Earthquake	
Other	

Emergency phone numbers will be posted near telephones, employee bulletin boards and other conspicuous locations where telephones will be used as the means of reporting emergencies.

Rescue and Medical Duties

The safety officer is responsible for the enlistment and training of the authorized Fire Brigade personnel. The Fire Brigade personnel shall be trained in the use of fire extinguishers and first responder first aid (CPR, Abdominal Thrust, etc.).

The following list is the authorized members of the Fire Brigade:

Fire Brigade Personnel

Name/Position	Designated Area

Alarm Systems

The emergency alarm system will provide warning for necessary emergency action as noted in this program. This alarm system will be capable of being perceived above ambient noise or light levels by all employees in the workplace. Tactile devices may be used to alert those employees who would not otherwise be able to recognize the audible or visual alarm. Alarm testing procedures shall be documented on Appendix C.

Training and Recordkeeping

Supervisors are responsible for training all employees covered under this program.

- At the time of initial assignment and annually thereafter, or
- When an employee's responsibilities change under this program.

Employees responsible for leading the evacuation will be trained in evacuation inspections of closed rooms, alternate escape routes, employees that may need additional assistance, buddy system and hazardous areas to avoid during evacuation procedures.

For additional information or explanation of the duties under the Emergency Action Program contact the company safety officer. Employee training is documented in Appendix D-Emergency Response Training Form.

Appendix A Emergency Escape Route

(Use floor plans or workplace maps to show emergency escape route assignments, locations of exits, locations of fire extinguishers, and designated safe areas.)

**Appendix B
Designated Safe Areas**

Emergency Situation	Department	Designated safe area
Fire		
Tornado		
Fuel or Chemical Release		
Earthquake		
Other		

Appendix C
Alarm Procedures

Emergency Situation	Alarm System
Fire	
Tornado	
Fuel or Chemical Release	
Earthquake	
Other	

**Appendix D
Emergency Response Training Form**

Date of Session: _____ Session Summary (Attached) _____

Instructor(s)

Qualifications

_____	_____
_____	_____
_____	_____
_____	_____

Employee Signature

Employee Job Title

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**Appendix E
Emergency Organization Plan**

Date _____

Department _____ Division _____

Facility Name _____ Address _____

Emergency contact telephone number _____ (_____) _____

Personnel responsible for the Emergency Organization:

Primary person in charge:

Name _____ Title _____

Alternative person in charge:

Name _____ Title _____

Primary notifies—to call fire, police, etc.:

Name _____ Title _____

Alternate notifies:

Name _____ Title _____

Fire extinguisher operator:

Name _____ Title _____

Alternate:

Name _____ Title _____

Alternate:

Name _____ Title _____

These individuals must know their responsibilities during times of emergency. They must also know the location of fire extinguishers and where to send visitors and employees during emergencies.

Fire evacuation procedures:

Severe weather procedures:

Bomb threat procedures:

Earthquake procedures:

This form is to be updated annually.

Emergency Action Plan - Employee Training

Training on EAP should be provided to all employees and should cover, but not be limited to:

1. How to report emergencies
2. Description of alarm system
3. Evacuation policy, procedures and escape route assignments
4. Exit diagrams
5. Procedures for sheltering-in-place
6. Procedures for employees who remain in place to operate fire extinguishers or shut down critical systems
7. Procedures to account for employees
8. The duties, responsibilities and names of employees assigned with rescue and medical tasks.
9. The names, titles, departments and phone numbers of employees who can be contacted for additional information or clarification of some aspect of the plan.
10. The site of an alternative communications center to be used in the event of a fire or explosion.

Date of Training ____/____/____

Trainer's Name _____

Trainees' Names _____

Lockout/Tagout

This program is to ensure all individuals are protected from unexpected activation or release of stored energy of machinery or equipment. This could occur during maintenance, repairing and cleaning activities. Normal equipment operations are not considered in this program. Lockout is a first means of protection. Warning tags only supplement the use of locks. Tags alone may be used only when the application of a lock is not practical.

Definitions

Lockout-The practice of using keyed or combination security locks to prevent the unwanted activation of mechanical or electrical equipment.

Tagout-The practice of using tags in conjunction with locks to increase the visibility and awareness that equipment is not to be energized or activated until such devices are removed. Tagout devices will be non-reusable, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds.

Activation/Energizing-To set machinery into motion by starting, switching, pushing, moving or otherwise engaging power sources for such equipment. To provide a flow of electricity or complete a circuit that is the main power source for the machinery/equipment.

Energy Control Procedures-Use of lockout/tagout equipment to ensure safe work practices.

Hazardous Motion-Motion of equipment under mechanical stress or gravity that may abruptly release and cause injury. Hazardous motion may result even after power sources are disconnected. Examples are coiled springs, raised hydraulic equipment and any sources of potential energy that may cause injury.

Responsibilities

CEO/Owner

Ensure procedures are developed and maintained outlining the lockout/tagout steps for all required equipment. The file will include the location, description, power source, primary hazards of equipment/machinery, a list of the primary operators maintenance personnel and a list of lockout/tagout equipment that is used and maintained on site. They will also ensure supervisors are providing employees with lockout/tagout training.

Supervisor

Ensure each employee engaging in work requiring lockout/tagout of energy sources understands and adheres to adopted procedures. Assure employees have received training in energy control procedures prior to operating the machinery or equipment. Provide and maintain necessary equipment and resources, including accident prevention signs, tags, padlocks, seals and/or other similarly effective means. Notify the safety department of new or revised equipment, machinery or operations that require

the use of lockout/tagout devices during servicing, maintenance or repair. Maintain all training records for lockout/tagout employee training.

Employees

Adhere to specific procedures as outlined in this document for all tasks that require the use of lockout/tagout procedures. Maintain lockout/tagout supplies in maintenance vehicles. Report any hazards that would not be controlled with lockout/tagout procedures.

Lockout/Tagout Equipment

Hardware includes locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners and other devices used for isolating, securing or blocking machines from energy sources.

- The devices shall be singularly identified, the only device used for controlling energy and not used for other purposes.
- The devices must be capable of withstanding the environment for the maximum period of exposure time.
- The tagout device shall be constructed and printed so exposure to weather conditions will not cause the tag to deteriorate and become illegible.
- The tag shall not deteriorate in a corrosive environment.
- The devices shall be standardized by one of the following criteria: color, shape or size.
- The device shall be substantial enough to prevent removal with the use of excessive force or bolt cutters.
- The tagout device and attachment shall be substantial enough to prevent inadvertent removal.

Identification on lockout/tagout device

- Shall identify the applying employee.
- Shall warn against hazardous conditions if the machines are energized.

Lockout/Tagout Procedures

An equipment survey will be conducted to locate and identify all isolating devices. The survey will identify switches, valves or other energy isolating devices to be locked or tagged out. More than one energy source (electrical, mechanical, stored energy or others) may be involved. Operators will be trained in the equipment lockout procedures. This training will include the type and magnitude of energy the machine or equipment utilizes.

Lockout steps

1. If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open toggle switch, etc.).
2. Operate the switch, valve or other energy isolating device(s) so the equipment is isolated from it energy source(s).
3. The energy source will be identified in the equipment survey. Stored energy (such as that in springs, elevated machine members, rotating flywheels, hydraulic systems and air, gas, steam or water pressure, etc.) must be dissipated or restrained by methods such as repositioning, blocking, bleeding down, etc.
4. Lockout/Tagout the energy isolating devices with assigned individual lock(s) or tag(s).

5. With no employees exposed, test the lockout procedure by testing the operating device.
CAUTION: Return operating controls to neutral or off position after the test.
6. The equipment is now locked out.
7. Mark the tag with name and date.

Machine Power Restoration

1. After servicing and/or maintenance is complete and equipment is ready for normal production operations, check the area around the machines or equipment to ensure no one is exposed.
2. After all tools have been removed from the machine or equipment, guards have been reinstalled and employees are in the clear, remove all lockout or tagout devices.
3. Operate the energy isolating devices to restore energy to the machine or equipment.

Restoration with more than one operator:

If more than one individual is required to lockout or tagout equipment, each shall place his/her own personal lockout/tagout device on the energy isolating device(s).

1. When an energy-isolating device cannot accept multiple locks or tags, a multiple lockout or tagout device (hasp) may be used.
2. If lockout is used, a single lock may be used to lockout the machine or equipment with the key placed in a lockout box or cabinet, which allows the use of multiple locks to secure it.
3. Each employee will then use his or her own lock to secure the box or cabinet.
4. As each person no longer needs to maintain his or her lockout protection, that person will remove his or her lock from the box or cabinet.

Temporary Removal of Lockout Device

If the lockout/tagout device must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, the following sequence of actions will be followed:

1. Clear the machine of tools and materials.
2. Ensure all employees have been safely positioned or removed from the area.
3. Instruct employees to remove the lockout/tagout devices.
4. Energize and proceed with testing or positioning.
5. De-energize all systems and reapply lockout devices as previously stated.

Maintenance When Energy Source Cannot Be Locked

Maintenance, repairing, cleaning, servicing, adjusting or setting up operations that cannot be accomplished with the energy source disconnected may be performed under the following conditions:

- The operating station (i.e.-external control panel) is under the control of a qualified operator.
- Employees are in clear view or communication with each other.
- All employees must be out of the area of hazard.
- Machine elements are locked out separately if the operator is required to leave the control station to install a tool.
- The machine shall be de-energized during adjustment or replacement of mechanical components.

Employee Training

Employees will receive annual lockout/tagout training. Employees will be trained on all new equipment prior to machinery operation. All new employees or employees who transfer jobs duties will be trained in their equipment's lockout/tagout procedures.

Energy Control Procedure Form

Machine: _____ (type, manufacturer, model and serial number)

Location: _____

Energy sources and locations of energy isolating devices:

1. _____
2. _____
3. _____
4. _____

Authorized employee(s) _____

Affected employee(s) _____

Qualified employee(s) _____

Procedure developed on _____ by _____

Specific procedure for this equipment is as follows:

Annual Inspection Certification Form

Machine: _____

Inspector: _____

Employees Consulted:

- _____
- _____
- _____
- _____

Date: _____

Results of Inspection:

Signature Of Inspector_____ Date_____

Signature Of Safety Director_____ Date_____

Sample Energy Control Procedure Form

Machine: Foofra Machine (Scott, Model 50, Serial No. 384F) (type, manufacturer, model and serial number)

Location: Folding Department

Energy Sources and Locations of Energy Isolating Devices:

1. Electric 440 V., Column P-6
2. Compressed Air, 90 Psi, Column P-6
3. Hydraulic, 500 Psi @ 12.5 GPM (Inlet Operating Pressure)
4. Column P-5, 100 Psi System Tank Pressure

Authorized Employee(s): Maintenance (David Smith, Tom Jones)

Affected Employee(s) Operator (Jane White) Operator Assistant (Bob Frank)

Qualified Employee(s) Electrical Maintenance (Sid Young)

Procedure Developed on: January 1, 2005 by Safety Director (Paula Anderson)

Specific Procedure For This Equipment Is As Follows:

1. Verbally notify Operator and Assistant that lockout will be done on the machine.
2. Electrical System Isolation--Press the red stop button at the operator's control panel. Turn electrical disconnect switch at column P-6 to the Off (open) position to de-energize all electrical components of the machine. Insert a lockout device through the switch and panel haspholes and lock securely in place with one of your own personal padlocks. Press green "on" button to verify effectiveness of lockout, then repress red stop button at operator's control panel.
3. Pneumatic System Isolation--Manually rotate the quick throw valve for the compressed air located at column P-6 to the off position (with the value handle at a 90 degree angle to the compressed air pipe) to secure the machine's compressed air source. Insert a lockout device through the valve handle and 90 degree hasp hole and lock securely in place with one of your own personal padlocks. Bleed the residual air pressure from the machine by opening the petcock valve (3/4 turn) at the bottom of the water trap located under the north side of the machine table. Close the petcock when the hissing from the escaping air stops (approximately 40 seconds). After waiting three minutes, reopen the petcock and listen for escaping air to verify effectiveness of lockout; then reclose petcock.
4. Hydraulic System Isolation--Primary bleed-down. Manually rotate the red handle on the inlet side of the hydraulic lockout valve located at column P-5 90 degrees clockwise to isolate the machine from the central hydraulic power system. Note: when the red handle is rotated 90

degrees clockwise in this manner, function pressure is automatically bled down to the system tank pressure of 100 PSI. Insert a lockout device through the hole in the flange at the bottom of the red handle and the hydraulic lockout valve hasp hole and securely in place with one of your own personal padlocks. Final Bleed-down--Place a five-gallon bucket on the floor beneath the discharge hose connected to the red quick disconnect valve which has been installed in the port leading to the flushing plug, on the outlet side of the hydraulic lockout valve. Slowly reopen the quick disconnect valve, directing the flow from the hose into the bucket until the flow stops. Close the quick disconnect valve. Wait two minutes. Slowly reopen the quick disconnect valve, watching discharge from the hose to ensure effectiveness of lockout then reclose quick disconnect valve.

5. The machine is now locked out and in a zero mechanical state.

Restoring Machine to Service

1. Check the Froofra machine and the immediate area around it to ensure people and tools are clear and the machine components are operationally intact.
2. Verify all the controls are in neutral.
3. Unlock and remove your personal padlock from the lockout device on the disconnect switch at column P-6. Remove the lockout device from the switch and hasp holes in the disconnect switch. Turn disconnect to On (closed position) to energize all electrical components on the machine.
4. Make sure that petcock valve at the bottom of the water trap located under the north side of the table is closed. Unlock and remove your personal padlock from the lockout device on the quickthrow valve handle for compressed air at column P-6. Remove the lockout device from the valve handle and the 90 degree hasp hole. Manually rotate the quick-throw valve to the on position (with the valve handle in the line with the compressed air pipe) to energize all pneumatic components on the machine.
5. Make sure the red quick disconnect, installed in the port leading to the flushing plug on the outlet side of the hydraulic lockout valve at column P-5, is closed. Unlock and remove your personal padlock from the lockout device in the flange at the bottom of the red handle on the inlet side of the hydraulic lockout valve. Remove the lockout device from the handle flange and the hydraulic lockout valve hasp hole. Manually rotate the red handle on the hydraulic lockout valve 90 degrees counterclockwise to energize all hydraulic components on the machine.
6. Notify the operator that the maintenance is complete and the machine is ready for use.

Personal Protective Equipment

The purpose of this plan is to ensure employee safety using personal protective equipment (PPE). This Personal Protective Equipment Program is required to comply with Occupational Safety and Health Administration (OSHA) regulations 29 CFR 1910.132. The information in this program is based on the OSHA standard.

Responsibility

The owner or safety officer will assess the workplace to determine if hazards are present, or likely to be present, which will require the use of personal protective equipment. Supervisors are responsible for training and ensuring that employees are using PPE. Employees are responsible for wearing PPE and complying with the company policies for this equipment.

Program Review and Update

The personal protective equipment plan will be reviewed or updated whenever there is new equipment or personnel changes that might affect the plan. The plan shall be reviewed when the supervisor feels that employees need refresher training.

Methods of Compliance


Hazard Assessment and Equipment Selection

When hazards are present, or likely to be present, the employer will:

- Select the types of personal protective equipment that will protect the employee from the hazards identified in the hazard assessment (Appendix A).
- Communicate selection decisions to each affected employee.
- Review the hazard that requires the use of PPE.
- Ensure PPE properly fits each affected employee.

Damaged and defective PPE shall not be used.

Training

 **PUTZHEIM CRESCENT INCORPORATED** will provide training to each employee who is required to use PPE. Each employee will be trained to know at least the following:

- When it is necessary;
- What is necessary;
- How to properly put on, take off, adjust and wear it;
- Its limitations;
- Proper care, maintenance, useful life and disposal.

When the supervisor believes that any previously trained employee does not understand the use of the equipment, he will retrain the employee. Circumstances requiring retraining include, but are not limited to:

- Changes in the workplace,
- Changes in the types of PPE to be used,
- Inadequacies in an employee's knowledge.

Each employee will demonstrate an understanding of the training and the ability to use PPE properly, before being allowed to perform work requiring its use.

The supervisor will verify that each employee has received and understood the required training through a written certification (Appendix B) that contains:

- The name of each employee trained,
- The date(s) of training and
- The subject of the certification.

**Appendix A
Hazard Certification Assessment**

Location	Hazard(s) Present	Employee(s) at Risk	Body part(s) at Risk	Personal Protective Equipment Required
Assessment Performed by		Date Assessment Performed		

Appendix B
Personal Protective Equipment Training

Subject of training:	Employee's Name:	Date	Training Successful (circle one)	Retraining Date / Reason for retraining
When and why PPE is required			(Yes/No)	
What specific PPE is required			(Yes/No)	
How to properly don, doff, adjust and wear PPE			(Yes/No)	
Limitations of PPE			(Yes/No)	
The proper care, maintenance, useful life and disposal of the PPE			(Yes/No)	

Training performed by:
Date of training:
Employee Signature:

Electric Power and Hand Tools

Employees who use hand and power tools and are exposed to the hazards of falling, flying, abrasive and splashing objects. All electrical connections for these tools must be suitable for the type of tool and the working conditions (e.g. wet, dusty, flammable vapors). When a temporary power source is used, a ground-fault circuit interrupter shall be used. Four basic safety rules can help prevent hazards associated with the use of hand and power tools:

- Keep all tools in good condition with regular maintenance.
- Use the right tool for the job.
- Examine each tool for damage before use and do not use damaged tools.
- Operate tools according to the manufacturers' instructions.

Hand Tools

Hand tools are tools that are powered manually and include anything from axes to wrenches. The greatest hazards posed by hand tools result from misuse and improper maintenance. Some examples include the following:

- If a chisel is used as a screwdriver, the tip of the chisel may break and fly off, hitting the user or other employees.
- If a wooden handle on a tool, such as a hammer or an axe, is loose, splintered, or cracked, the head of the tool may fly off and strike the user or other employees.
- If the jaws of a wrench are sprung, the wrench might slip.
- If impact tools such as chisels, wedges or drift pins have mushroomed heads, the heads might shatter on impact, sending sharp fragments flying toward the user or other employees.
- Employees should be trained in the proper use and handling of tools and equipment. When using saw blades, knives or other tools, employees should direct the tools away from aisle areas and away from other employees.
- Knives and scissors must be sharp. Dull tools can cause more hazards than sharp ones.
- Cracked saw blades must be removed from service.
- Wrenches must not be used when jaws are sprung to the point that slippage occurs.
- Impact tools such as drift pins, wedges and chisels must be kept free of mushroomed heads. The wooden handles of tools must not be splintered.
- Iron or steel hand tools may produce sparks that can be an ignition source around flammable substances. Where this hazard exists, spark-resistant tools made of non-ferrous materials should be used.
- Appropriate personal protective equipment such as safety goggles and gloves must be worn to protect against hazards that may be encountered while using hand tools.
- Workplace floors shall be kept clean and dry to prevent accidental slips with or around dangerous hand tools.

Power Tools

Power tools are extremely hazardous when used improperly and must be fitted with guards and safety switches. The types of power tools are determined by their power source: electric, pneumatic, liquid fuel, hydraulic and powder-actuated.

To prevent hazards associated with the use of power tools, employees should observe the following general precautions:

- Never carry a tool by the cord or hose.
- Never yank the cord or the hose to disconnect it from the receptacle.
- Keep cords and hoses away from heat, oil and sharp edges.
- Disconnect tools when not using them, before servicing and cleaning them and when changing accessories such as blades, bits, and cutters.
- Keep all people not involved with the work at a safe distance from the work area.
- Secure work with clamps or a vise, freeing both hands to operate the tool.
- Avoid accidental starting. Do not hold fingers on the switch button while carrying a plugged-in tool.
- Maintain tools with care. Keep them sharp and clean for best performance.
- Follow instructions in the user's manual for lubricating and changing accessories.
- Be sure to keep good footing and maintain good balance when operating power tools.
- Wear proper apparel for the task. Loose clothing, ties or jewelry can become caught in moving parts.
- Remove all damaged portable electric tools from use and tag them: "Do Not Use."

Guards

The exposed moving parts of power tools need to be safeguarded. Belts, gears, shafts, pulleys, sprockets, spindles, drums, flywheels, chains or other reciprocating, rotating or moving parts of equipment must be guarded. Machine guards, as appropriate, must be provided to protect the operator and others from the following:

- Point of operation.
- Nip points.
- Rotating parts.
- Flying chips and sparks.

Safety guards must never be removed when a tool is being used. Portable circular saws having a blade greater than two inches (5.08 centimeters) in diameter must be equipped at all times with guards. An upper guard must cover the entire blade of the saw. A retractable lower guard must cover the teeth of the saw except where it makes contact with the work material. The lower guard must automatically return to the covering position when the tool is withdrawn from the work material.

Operating Controls and Switches

The following hand-held power tools must be equipped with a constant-pressure switch or control that shuts off the power when pressure is released:

- drills
- tappers
- fastener drivers
- horizontal, vertical and angle grinders with wheels more than two inches (5.08 centimeters) in diameter

- disc sanders with discs greater than two inches (5.08 centimeters)
- belt sanders
- reciprocating saws
- saber saws
- scroll saws
- jigsaws with blade shanks greater than 1/4-inch (0.63 centimeters) wide
- other similar tools

These tools also may be equipped with a “lock-on” control, if it allows the worker to also shut off the control in a single motion using the same finger or fingers.

The following hand-held power tools must be equipped with either a positive “on-off” control switch, a constant pressure switch or a “lock-on” control:

- disc sanders with discs two inches (5.08 centimeters) or less in diameter;
- grinders with wheels two inches (5.08 centimeters) or less in diameter;
- platen sanders, routers, planers, laminate trimmers, nibblers, shears and scroll saws;
- jigsaws, saber and scroll saws with blade shanks 1/4-inch (6.35 millimeters) or less in diameter.

It is recommended that the constant-pressure control switch be regarded as the preferred device.

Other hand-held power tools such as circular saws having a blade diameter greater than two inches (5.08 centimeters), chain saws and percussion tools with no means of holding accessories securely must be equipped with a constant-pressure switch.

Electric Tools

Employees using electric tools must be aware of several dangers. Among the most serious hazards are electrical burns and shocks. Electrical shocks, which can lead to injuries such as heart failure and burns, are among the major hazards associated with electric powered tools. Under certain conditions, even a small amount of electric current can result in fibrillation of the heart and death. An electric shock also can cause the employee to fall off a ladder or other elevated work surface and be injured due to the fall.

To protect the user from shock and burns, electric tools must have a three-wire cord with a ground and be plugged into a grounded receptacle, be double insulated or be powered by a low voltage isolation transformer. Three-wire cords contain two current-carrying conductors and a grounding conductor.

Any time an adapter is used to accommodate a two-hole receptacle, the adapter wire must be attached to a known ground. The third prong must never be removed from the plug. Double-insulated tools are available that provide protection against electrical shock without third-wire grounding. On double insulated tools, an internal layer of protective insulation completely isolates the external housing of the tool. The following general practices should be followed when using electric tools:

- Operate electric tools within their design limitations.
- Use gloves and appropriate safety footwear when using electric tools.
- Store electric tools in a dry place when not in use.
- Do not use electric tools in damp or wet locations unless they are approved for that purpose.
- Keep work areas well lit when operating electric tools.
- Ensure cords from electric tools do not present a tripping hazard.

- Employees who use electric tools must be protected by ground-fault circuit interrupters or an assured equipment-grounding conductor program.

Portable Abrasive Wheel Tools

Portable abrasive grinding, cutting, polishing and wire buffing wheels create special safety problems because they may throw off flying fragments.

Abrasive wheel tools must be equipped with guards that: (1) cover the spindle end, nut and flange projections, (2) maintain proper alignment with the wheel and (3) do not exceed the strength of the fastenings.

Before an abrasive wheel is mounted, it must be inspected closely for damage and should be sound- or ring-tested to ensure it is free from cracks or defects.

- To test, wheels should be tapped gently with a light, non-metallic instrument. If the wheels sound cracked or dead, they must not be used because they could fly apart in operation.
- A stable and undamaged wheel, when tapped, will give a clear metallic tone or “ring.”
- To prevent an abrasive wheel from cracking, it must fit freely on the spindle. The spindle nut must be tightened enough to hold the wheel in place without distorting the flange.
- Always follow the manufacturer’s recommendations.
- Take care to ensure the spindle speed of the machine will not exceed the maximum operating speed marked on the wheel.
- An abrasive wheel may disintegrate or explode during start-up. Allow the tool to come up to operating speed prior to grinding or cutting.
- The employee should never stand in the plane of rotation of the wheel as it accelerates to full operating speed.
- Portable grinding tools need to be equipped with safety guards to protect employees not only from the moving wheel surface, but also from flying fragments in case of wheel breakage.

When using a powered grinder:

- Always use eye or face protection.
- Turn off the power when not in use.
- Never clamp a hand-held grinder in a vise.

Pneumatic Tools

- Pneumatic tools are powered by compressed air and include chippers, drills, hammers and sanders. There are several dangers associated with the use of pneumatic tools. First and foremost is the danger of getting hit by one of the tool’s attachments or by some kind of fastener the employee is using with the tool.
- Pneumatic tools must be fastened securely to the air hose to prevent them from becoming disconnected. A short wire or positive locking device attaching the air hose to the tool must also be used as an added safeguard.
- If an air hose is more than 1/2-inch (12.7 millimeters) in diameter, a safety excess flow valve must be installed at the source of the air supply to reduce pressure in case of hose failure. In general, the same precautions should be taken with an air hose that are recommended for electric cords, because the hose is subject to the same kind of damage or accidental striking, and because it also presents tripping hazards.

- When using pneumatic tools, a safety clip or retainer must be installed to prevent attachments such as chisels on a chipping hammer from being ejected during tool operation.
- Pneumatic tools that shoot nails, rivets, staples or similar fasteners and operate at pressures more than 100 pounds per square inch (6,890 kPa), must be equipped with a special device to keep fasteners from being ejected, unless the muzzle is pressed against the work surface.
- Airless spray guns that atomize paints and fluids at pressures of 1,000 pounds or more per square inch (6,890 kPa) must be equipped with automatic or visible manual safety devices that will prevent pulling the trigger until the safety device is manually released.
- Eye protection is required, and head and face protection is recommended for employees working with pneumatic tools.
- Screens must also be set up to protect nearby employees from being struck by flying fragments around chippers, riveting guns, staplers or air drills.
- Compressed air guns should never be pointed toward anyone.
- Employees should never “dead-end” them against themselves or anyone else.
- A chip guard must be used when compressed air is used for cleaning.
- Use of heavy jackhammers can cause fatigue and strains. Heavy rubber grips reduce these effects by providing a secure handhold.
- Workers operating a jackhammer must wear safety glasses and safety shoes to protect against injury if the jackhammer slips or falls.
- A face shield should be used.
- Working with noisy tools such as jackhammers requires proper, effective use of appropriate hearing protection.

Liquid Fuel Tools

Fuel-powered tools are usually operated with gasoline. The most serious hazard associated with the use of fuel-powered tools comes from fuel vapors that can burn or explode and also give off dangerous exhaust fumes. The employee must be careful to handle, transport and store gas or fuel only in approved flammable liquid containers, according to proper procedures for flammable liquids. Before refilling a fuel-powered tool tank, the user must shut down the engine and allow it to cool to prevent accidental ignition of hazardous vapors. When a fuel-powered tool is used inside a closed area, effective ventilation and/or proper respirators such as atmosphere-supplying respirators must be utilized to avoid breathing carbon monoxide. Fire extinguishers must also be available in the area.

Powder-Actuated Tools

- Powder-actuated tools operate like a loaded gun and must be treated with extreme caution. In fact, they are so dangerous that they must be operated only by specially trained employees.
- When using powder-actuated tools, an employee must wear suitable ear, eye and face protection.
- The user must select a powder level—high or low velocity—that is appropriate for the powder-actuated tool and necessary to do the work without excessive force.
- The muzzle end of the tool must have a protective shield or guard centered perpendicular to and concentric with the barrel to confine any fragments or particles that are projected when the tool is fired.
 - A tool containing a high-velocity load must be designed not to fire unless it has this kind of safety device.

- To prevent the tool from firing accidentally, two separate motions are required for firing. The first motion is to bring the tool into the firing position, and the second motion is to pull the trigger.
- The tool must not be able to operate until it is pressed against the work surface with a force of at least five pounds (2.2 kg) greater than the total weight of the tool. If a powder-actuated tool misfires, the user must hold the tool in the operating position for at least 30 seconds before trying to fire it again. If it still will not fire, the user must hold the tool in the operating position for another 30 seconds and then carefully remove the load in accordance with the manufacturer's instructions. This procedure will make the faulty cartridge less likely to explode.
- The bad cartridge should then be put in water immediately after removal.
- If the tool develops a defect during use, it should be tagged as defective and must be taken out of service immediately until it is properly repaired.
- Safety precautions that must be followed when using powder actuated tools include the following:
 - Do not use a tool in an explosive or flammable atmosphere.
 - Inspect the tool before using it to determine that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions and has the proper shield, guard and attachments recommended by the manufacturer.
 - Do not load the tool unless it is to be used immediately.
 - Do not leave a loaded tool unattended, especially where it would be available to unauthorized persons.
 - Keep hands clear of the barrel end.
 - Never point the tool at anyone.

When using powder-actuated tools to apply fasteners, several additional procedures must be followed:

- Do not fire fasteners into material that would allow the fasteners to pass through to the other side.
- Do not drive fasteners into very hard or brittle material that might chip or splatter or make the fasteners ricochet.
- Always use an alignment guide when shooting fasteners into existing holes.
- When using a high-velocity tool, do not drive fasteners more than three inches (7.62 centimeters) from an unsupported edge or corner of material such as brick or concrete.
- When using a high velocity tool, do not place fasteners in steel any closer than 1/2-inch (1.27 centimeters) from an unsupported corner edge unless a special guard, fixture, or jig is used.

Hydraulic Power Tools

The fluid used in hydraulic power tools must be an approved fire resistant fluid and must retain its operating characteristics at the most extreme temperatures to which it will be exposed. The exception to fire-resistant fluid involves all hydraulic fluids used for the insulated sections of derrick trucks, aerial lifts and hydraulic tools that are used on or around energized lines. This hydraulic fluid shall be of the insulating type.

The manufacturer's recommended safe operating pressure for hoses, valves, pipes, filters, and other fittings must not be exceeded. All jacks, including lever and ratchet jacks, screw jacks and hydraulic jacks, must have a stop indicator, and the stop limit must not be exceeded. Also, the manufacturer's load

limit must be permanently marked in a prominent place on the jack, and the load limit must not be exceeded.

A jack should never be used to support a lifted load. Once the load has been lifted, it must immediately be blocked up. Put a block under the base of the jack when the foundation is not firm, and place a block between the jack cap and load if the cap might slip.

To set up a jack, make certain of the following:

- The base of the jack rests on a firm, level surface,
- The jack is correctly centered,
- The jack head bears against a level surface, and
- The lift force is applied evenly.

Proper maintenance of jacks is essential for safety. All jacks must be lubricated regularly. In addition, each jack must be inspected according to the following schedule: (1) for jacks used continuously or intermittently at one site—inspected at least once every six months, (2) for jacks sent out of the shop for special work—inspected when sent out and inspected when returned, and (3) for jacks subjected to abnormal loads or shock—inspected before use and immediately thereafter.

Employee Training

- Supervisors shall train employees to operate the tool regardless of their similarity to another tool of the same type.
- Employees should be able to demonstrate the safe operation of the tool.
- Employees should inspect equipment before each use.
- They shall demonstrate defects in machinery.
- Supervisors shall train employees to report defects and method of obtaining a replacement tool.

Electrical Safety

This program focuses on the design and use of electrical equipment and systems. The program covers only the exposed or operating elements of an electrical installation such as lighting, equipment, motors, machines, appliances, switches, controls, and enclosures, requiring that they be constructed and installed to minimize workplace electrical dangers. Installation of main building electrical systems, transformers, power-lines, underground lines or other system devices shall be installed by a trained and licensed electrical contractor.

There are four main types of electrical injuries: electrocution (death due to electrical shock), electrical shock, burns and falls. Employees will be trained to recognize, evaluate, control or eliminate the hazards.

Recognizing Hazards

The first step toward protecting workers is to recognize the many hazards they face on the job. To do this, the supervisor and employee must know which situations can place employees in danger. The following is a checklist to be used to evaluate potential hazardous conditions or exposures:

- Wiring is adequate.
- Electrical equipment is appropriate for the environment, with the correct capacity and labeling.
- Equipment is in good condition and not damaged before installation.
- The current will break at the listed rating for the circuit breaker.
- Electrical parts are not exposed.
- Overhead power-lines are not within contact range of work area.
- Wires do not have poor insulation.
- Electrical systems and tools that are grounded or double-insulated.
- Circuits are not overloaded.
- Damaged power tools and equipment are removed from site.
- Appropriate PPE is used by employees.
- Appropriate tools are used by employees.
- Chemicals are labeled and used correctly.
- Ladders do not conduct electricity.
- The area is dry with no standing water.
- Equipment is installed securely.
- Equipment is not exposed to possible overheating due to poor air circulation or covering the ventilation device.

Extension Cord Use

The size of wire in an extension cord must be compatible with the amount of current the cord is expected to carry. The amount of current depends on the equipment plugged into the extension cord. Current ratings (how much current a device needs to operate) are often printed on the nameplate. If a power rating is given, it is necessary to divide the power rating in watts by the voltage to find the current rating. For example, a 1,000-watt heater plugged into a 120-volt circuit will need almost 10 amps of current. Add to find the total current needed to operate all the appliances supplied by the cord. Choose a

wire size that can handle the total current. Remember—The larger the gauge number, the smaller the wire.

The length of the extension cord also needs to be considered when selecting the wire size. Voltage drops over the length of a cord. If a cord is too long, the voltage drop can be enough to damage equipment. Many electric motors only operate safely in a narrow range of voltages and will not work properly at voltages different than the voltage listed on the nameplate. Even though light bulbs operate (somewhat dimmer) at lowered voltages, do not assume electric motors will work correctly at less-than-required voltages. Also, when electric motors start or operate under load, they require more current. The larger the size of the wire, the longer a cord can be without causing a voltage drop that could damage tools and equipment.

The grounding path for extension cords must be kept intact to keep employees safe. A typical extension cord grounding system has four components:

- a third wire in the cord, called a ground wire;
- a three-prong plug with a grounding prong on one end of the cord;
- a three-wire, grounding-type receptacle at the other end of the cord; and
- a properly grounded outlet.

Extension cords might be used in wet places, so adequate insulation is necessary to prevent shocks. Because extension cords are often used near combustible materials (such as wood shavings and sawdust) a short in an extension cord could easily cause arcing and a fire.

Cords must be replaced when the internal wire is cut in any form. Minor repairs may be made with the use of electric rated tape to the exterior plastic protection of a cord. The supervisor will determine when the cord should be removed from service. Any damage to the connecting plug, grounding prong or wire should render the cord out of service. The cord shall be cut up and thrown away. Cords shall be inspected quarterly and documented on an inspection form.

Working Clearances

The minimum clear working space in front of electric equipment such as switchboards, control panels, switches, circuit breakers, motor controllers, relays, and similar equipment shall not be less than specified in the following table unless otherwise specified. Distances shall be measured from the live parts if they are exposed, or from the enclosure front or opening if the live parts are enclosed. However, working space is not required in back of equipment such as dead-front switchboards or control assemblies where there are no renewable or adjustable parts (such as fuses or switches) on the back and where all connections are accessible from locations other than the back. Where rear access is required to work on de-energized parts on the back of enclosed equipment, a minimum working space of 30 inches (762 mm) horizontally shall be provided.

Minimum Depth of Clear Working Space in Front of Electric Equipment

Nominal Voltage to Ground	Condition		
	Feet	Feet	Feet
	A	B	C
601 to 2,500	3	4	5
2,501 to 9,000	4	5	6
9,001 to 25,000	5	6	9
25,001 to 75 kV	6	8	10
Above 75 kV	8	10	12

Conditions Defined

A—Exposed live parts on one side and no live or grounded parts on the other side the working space, or exposed live parts on both sides effectively guarded by insulating materials. Insulated wire or insulated effectively guarded by insulating materials. Insulated wire or insulated bus-bars operating at not over 300 volts are not considered live parts.

B—Exposed live parts on one side and grounded parts on the other side. Walls constricted of concrete, brick, or tiles are considered to be grounded surfaces.

C—Exposed live parts on both sides of the workspace (not guarded as provided in Condition (a)] with the operator between.

Isolate Energized Components

Electrical hazards exist when wires or other electrical parts are exposed. These hazards need to be controlled to create a safe work environment. Isolation of energized electrical parts makes them inaccessible unless tools and special effort are used. Isolation can be accomplished by placing the energized parts at least eight feet high and out of reach, or by guarding. Guarding is a type of isolation that uses various structures—like cabinets, boxes, screens, barriers, covers and partitions—to closeoff live electrical parts.

Practice the following precautions to prevent injuries from contact with live parts:

- Immediately report exposed live parts to a supervisor if not authorized to make repairs to equipment.
- Provide guards or barriers if live parts cannot be enclosed completely.
- Use covers, screens or partitions for guarding that require tools to remove them.
- Replace covers that have been removed from panels, motors or fuse boxes.
- Even when live parts are elevated to the required height (eight feet), care should be taken when using objects (like metal rods or pipes) that can contact these parts.
- Overhead powerlines shall be insulated or shielded to prevent contact if operations require employee to be within the contact area.

- Close unused conduit openings in boxes so that foreign objects (pencils, metal chips, conductive debris, etc.) cannot get inside and damage the circuit.

Lock-out/Tag-out on Circuits and Equipment

Lock-out/tag-out is an essential safety procedure that protects employees from injury while working on or near electrical circuits and equipment. Lock-out involves applying a physical lock to the power source(s) of circuits and equipment after they have been shut off and de-energized. The source is then tagged out with an easy-to-read tag that alerts other employees in the area that a lock has been applied.

- Identify all sources of electrical energy for the equipment or circuits in question.
- Disable backup energy sources such as generators and batteries.
- Identify all shut-offs for each energy source.
- Notify all personnel that equipment and circuitry must be shut off, locked out and tagged out. Simply turning a switch off is NOT enough.
- Shut off energy sources and lock switchgear in the OFF position. Each employee should apply his or her individual lock. Do not give your key to anyone.
- Test equipment and circuitry to make sure they are de-energized. This must be done by a qualified person.
- Deplete stored energy by bleeding, blocking, grounding, etc.
- Apply a tag to alert other workers that an energy source or piece of equipment has been locked out.
- Make sure everyone is safe and accounted for before equipment and circuits are unlocked and turned back on. Note that only a qualified person may determine when it is safe to reenergize circuits.

Use Proper Insulation

Insulation is made of material that does not conduct electricity (usually plastic, rubber, or fiber). Insulation covers wires and prevents conductors from coming in contact with each other or any other conductor. If conductors are allowed to make contact, a short circuit is created. In a short circuit, current passes through the shorting material without passing through a load in the circuit, and the wire becomes overheated. Insulation keeps wires and other conductors from touching, which prevents electrical short circuits.

- In all situations, employees must be careful not to damage insulation while installing it.
- Do not allow staples or other supports to damage the insulation.
- Bends in a cable must have an inside radius of at least 5 times the diameter of the cable so that insulation at a bend is not damaged.
- Extension cords come with insulation in a variety of types and colors. The insulation of extension cords is especially important.
- Insulation on individual wires is often color-coded. In general, insulated wires used as equipment grounding conductors are either continuous green or green with yellow stripes. The grounded conductors that complete a circuit are generally covered with continuous white or gray insulation. The ungrounded conductors, or “hot” wires, may be any color other than green, white, or gray. They are usually black or red.
- Conductors and cables must be marked by the manufacturer to show the following:
 - Maximum voltage capacity,

- AWG size,
- Insulation-type letter, and
- The manufacturer's name or trademark.

Control Hazards of Fixed Wiring

The National Electric Code (NEC) requirements for fixed wiring shall always be followed. The wiring methods and size of conductors used in a system depend on several factors:

- Intended use of the circuit system
- Building materials
- Size and distribution of electrical load
- Location of equipment (such as underground burial)
- Environmental conditions (such as dampness)
- Presence of corrosives
- Temperature extremes

Aluminum wire and connections should be handled with special care. Connections made with aluminum wire can loosen due to heat expansion and oxidize if they are not made properly. Loose or oxidized connections can create heat or arcing. Special clamps and terminals are necessary to make proper connections using aluminum wire. Antioxidant paste can be applied to connections to prevent oxidation.

Control Hazards of Flexible Wiring

Electrical cords supplement fixed wiring by providing the flexibility required for maintenance, portability, isolation from vibration, and emergency and temporary power needs. Flexible wiring can be used for extension cords or power supply cords. Power supply cords can be removable or permanently attached to the appliance. Flexible cords cannot be used as a substitute for the fixed wiring of a structure. Flexible cords must not be:

- run through holes in walls, ceilings or floors;
- run through doorways, windows or similar openings (unless physically protected);
- attached to building surfaces (except with a tension take-up device within six feet of the supply end);
- hidden in walls, ceilings or floors; or
- hidden in conduit or other raceways.

Ground Circuits and Equipment

When an electrical system is not grounded properly, a hazard exists. This is because the parts of an electrical wiring system that a person normally touches may be energized, or live, relative to ground. Parts like switch plates, wiring boxes, conduit, cabinets and lights need to be at 0 volts relative to ground. If the system is grounded improperly, these parts may be energized. The metal housings of equipment plugged into an outlet needs to be grounded through the plug.

Metal plumbing is often used as a ground. When plumbing is used as a grounding conductor, it must also be connected to a grounding device such as a conductive rod. Rods used for grounding must be driven at least eight feet into the earth.

Leakage current occurs when an electrical current escapes from its intended path. Leakages are sometimes low-current faults that can occur in all electrical equipment because of dirt, wear, damage or moisture.

A ground fault occurs when current passes through the housing of an electrical device to ground. Proper grounding protects against ground faults. Ground faults are usually caused by misuse of a tool or damage to its insulation. This damage allows a bare conductor to touch metal parts or the tool housing. Grounding does not guarantee that an employee will not be shocked, injured, or killed from defective equipment. However, it greatly reduces the possibility.

Equipment needs to be grounded under any of these circumstances:

- The equipment is within eight feet vertically and five feet horizontally of the floor or walking surface.
- The equipment is within eight feet vertically and five feet horizontally of grounded metal objects you could touch.
- The equipment is located in a wet or damp area and is not isolated.
- The equipment is connected to a power supply by cord and plug and is not double-insulated.

Ground Fault Circuit Interrupters (GFCI)

A GFCI is a fast-acting switch that detects any difference in current between two circuit conductors. If either conductor comes in contact—either directly or through part of a body—with a ground (a situation known as a ground fault), the GFCI opens the circuit in a fraction of a second. If a current as small as 4 to 6 mA does not pass through both wires properly, but instead leaks to the ground, the GFCI is tripped. The current is shut off. For a GFCI to work properly, the neutral conductor (white wire) must (1) be continuous, (2) have low resistance, and (3) have sufficient current-carrying capacity.

GFCIs help protect employees from electrical shock by continuously monitoring the circuit. However, a GFCI does not protect a person from line-to-line hazards such as touching two “hot” wires (240 volts) at the same time or touching a “hot” and neutral wire at the same time. Also be aware that instantaneous currents can be high when a GFCI is tripped. A shock may still be felt. A reaction to the shock could cause injury, perhaps from falling.

Test GFCIs regularly by pressing the “test” button. If the circuit does not turn off, the GFCI is faulty and must be replaced. The NEC requires that GFCIs be used in these high-risk situations:

- Electricity is used near water.
- The user of electrical equipment is grounded (by touching grounded material).
- Circuits are providing power to portable tools or outdoor receptacles.
- Temporary wiring or extension cords are used.

Specifically, GFCIs must be installed in bathrooms, garages, outdoor areas, crawl spaces, unfinished basements, kitchens and near wet bars.

Bond Components to Assure Grounding Path

In order to assure a continuous, reliable electrical path to ground, a bonding jumper wire is used to make sure electrical parts are connected. To make a good electrical connection, a bonding jumper needs to be installed. A metal cold water pipe that is part of a path to ground may need bonding jumpers around

plastic anti-vibration devices, plastic water meters or sections of plastic pipe. A bonding jumper is made of conductive material and is tightly connected to metal pipes with screws or clamps to bypass the plastic and assure a continuous grounding path. Bonding jumpers are necessary because plastic does not conduct electricity and would interrupt the path to ground. Additionally, interior metal plumbing must be bonded to the ground for electrical service equipment in order to keep all grounds at the same potential (zero volts). Even metal air ducts should be bonded to electrical service equipment.

Control Overload Current Hazards

When a current exceeds the current rating of equipment or wiring, a hazard exists. The wiring in the circuit, equipment, or tool cannot handle the current without heating up or even melting. Not only will the wiring or tool be damaged, but the high temperature of the conductor can also cause a fire. To prevent this from happening, an over-current protection device (circuit breaker or fuse) is used in a circuit. These devices open a circuit automatically if they detect current in excess of the current rating of equipment or wiring. This excess current can be caused by an overload, short circuit or high-level ground fault. Over-current protection devices are designed to protect equipment and structures from fire. They do not protect you from electrical shock.

A circuit breaker should not be used regularly to turn power on or off in a circuit, unless the breaker is designed for this purpose and marked SWD (stands for “switching device”). A fuse is another type of over-current protection device. After an overload is found and corrected, a blown fuse must be replaced with a new one of appropriate amperage.

Hazardous Environments

Only equipment rated for hazardous environments shall be used or taken into the environment. Hazardous environments are places that contain flammable or explosive materials such as flammable gasses or vapors (Class I Hazardous Environments) finely pulverized flammable dusts (Class II Hazardous Environments) or fibers or metal filings that can catch fire easily (Class III Hazardous Environments). Hazardous environments may be found in aircraft hangers, gas stations, storage plants for flammable liquids, grain silos and mills where cotton fibers may be suspended in the air. Special electrical systems are required in hazardous environments.

Source: National Institute of Occupational Safety and Health Publication No. 2002-123 Electrical Safety, Safety and Health for the Electric trades, Student Manual.

OSHA 1926 Subpart K Electrical

OSHA 1910 Subpart S Electrical

Machine Guarding

This program establishes the requirements for isolation of both point of operation and power transmission hazards so employees are protected from getting caught in or struck by machines or equipment during usage, servicing and repair.

Responsibilities

Company management is responsible for implementing and enforcing the use of this program.

Technical Manager is the designated Machine Guarding Program Coordinator, and is responsible for the following:

- Develop and administer the program specific to this facility.
- Ensure training is conducted and documented for all covered employees.
- Ensure machine operators conduct daily inspections of the guards and devices. The inspections should verify the units work as designed and the operators are protected. The Program Coordinator or Maintenance Supervisor should retain inspection records.

Supervisors:

- Make sure all required operators test all machine guarding before any machine is used.
- Assure that all employees in the area know not to try to operate the equipment if it is not protected.
- Assure that the authorized person performs the repair of any machine guarding that is found not operating, as required before any machine is used.

Maintenance Supervisors:

- Participate in developing written procedures for all pieces of equipment that may need repair to make sure that all guards and devices are put back in operation and tested before being released to any department or operator.
- Maintain an adequate supply of locks, tags, multiple lock adapters (hasps) and single-use cable ties to secure tags that meet the requirements identified in the Lockout/Tagout Program, for use by employees on multiple energy source equipment to make sure that his not the department operators are injured while any machine is unprotected or down for repair.
- Assure that only employees trained as "Authorized" are allowed to perform repair on equipment.
- Maintain full repair records as well as inspection records as required by OSHA and any local authorities having jurisdiction.

Employees:

- All employees must follow the procedures in this program as they apply to their classification as operator, or other employee.
- Actively participate in assigned training sessions, and follow the instructions provided.

Purchasing:

- Buy guards and devices that meet the specifications outlined in the Machine Guarding Program.
- Assure all new equipment purchased for the facility is guarded as required by this program when possible.

Training Program

Definitions

Point of operation

The area where the machine does its operation or task. For example the point of operation for a punch press is where the die is located, and the unit does the punching.

Power Transmission Point

The area where the machine transfers power from the prime mover to the point of operation or any other area in the machine where power is need to perform properly. For example, on a punch press the belt and the area around the belt and pulleys on the motor and on the main wheel of the unit. Belt guards normally protect such areas.

Nip Points

Any point where an employee can get caught between two or more moving parts on a machine. An example is the area at the in-running point where the belt and the pulley come in contact. The area on the other side of the wheel is the out- running point and is not considered a hazard of this type.

Safety Guard

A device that provides a physical barrier between the employee and the hazard. Bars or a cage are an example of this kind of protection.

Safety Device

A device that provides for protection from a hazard by sensing or causing the machine to not function or requiring the location of the employee's hands outside the point of operation before it will operate or cycle. Two hand controls or electric eyes are examples of this kind of protection. These are not permitted on some machines or operations.

Authorized Employees Training

All maintenance employees and department supervisors will be trained to use the machine guarding procedures. The training will be conducted by (*Trchnical Manager*) at the time of initial hire. Retraining shall be held at least annually. The training will consist of the following:

- Review of general machine guarding.
- Review of specific procedures for machinery, equipment and processes.
- Location and use of specific machine guarding procedures.
- Procedures when questions arise

Operator Employee Training

This training will cover the following:

- Only trained and authorized employees will repair, replace or adjust machinery, equipment or processes as authorized by management when all required training is in place.

- No employee may alter or make any guard or device ineffective so as to change the protection of any machine or operation.
- Purpose and use of all machine guarding procedures.

Other Employee Training

- Only trained and authorized employees will repair, replace or adjust machinery or equipment.
- That only trained employee may operate any machine or equipment.

Preparation for Machine Guarding Procedures

A machine guarding survey will be conducted to locate and identify all hazards to verify which machinery and equipment needs protection. A machine guarding procedure will be developed for each piece of equipment or machinery that has recognized hazards. The procedures will describe the hazards, location of hazards, types of hazards, and any special hazards. If machine guarding does not exist for a particular piece of equipment, machinery or process, one must be developed prior to usage. As repairs and/or renovations of existing machine guarding are made, standardized controls will be used which meet current OSHA requirements.

Routine Maintenance & Machine Adjustments

Machine guarding procedures are not required if equipment must be operating for proper adjustment. This rare exception may be used only by trained and authorized employees when specific procedures have been developed to safely avoid hazards with proper training. All consideration shall be made to prevent the need for an employee to break the plane of a normally guarded area of the equipment by use of tools and other devices. Supervisor permission is required before any operation without guards.

Standard Operating Procedures: Machine Guarding

Before operating any machine, use the following procedures to ensure the machinery and equipment is safe.

- **Preparation for Operation**
Before authorized employees turn on a machine or piece of equipment, the authorized employee will have knowledge of the type and magnitude of the guarding and the status of the guarding. The guards or devices should be tested before each shift or operator change. All tests should be recorded on a log located at each machine guarding unit. Notify your supervisor if any guard or device does not work as required so that repairs can be made before the machine is put into operation. Any such machine should be tagged as out of service until the repairs are made and the unit tests satisfactory.
- **Machine guarding equipment after any repair process**
In order to re-energize equipment prior to the job's completion, the authorized employee will:
 1. Remove unnecessary tools from inside the equipment.
 2. Assure that no employees are in or around the equipment.
 3. Replace all guarding or devices.
 4. After testing/repositioning, return main disconnect to the off position and notify department supervisor.

Machine: _____

[illegible]

Machine Guard Inventory				
Date:				
Machine ID	Guard Present (Yes/No)	Original or End-User Built	Guard Adequate To Operation? (Yes or No)	Lockout/Tagout or Disabled If Not Adequate?

Hazard Communication

The Hazard Communication Program's purpose is to protect employees from exposure to hazardous chemicals that could harm their health and to help assure the evaluation and transmission of information concerning chemicals used in the workplace. The content of this program is designed to meet the requirements of OSHA's Hazard Communication Standard 29 CFR 1910.1200. This program sets uniform guidelines to be used as a minimum.

Responsibilities

The Company Owner/President

Required to establish a written, comprehensive hazard communication program that includes:

1. Material Safety Data Sheets (MSDS)
2. Hazardous chemical lists
3. Provisions for container labeling
4. Informing and training our employees, and
5. Informing contractors of hazards onsite

Supervisors

Coordinate and meet all requirements of this program.

Employees

Responsible for following the Hazard Communication Program requirements.

Chemical Inventory

A chemical inventory must be performed for all chemicals used in the workplace. This is not limited to just liquids, but could also include solids, mists, dusts, gases, fumes, vapors and biological constituents. Those items purchased and used in the same manner and quantity as would be in a residential setting (i.e. White Out, glass cleaner, etc.) do not have to be part of this inventory.

The inventory shall list the chemical name, department used in, storage areas, the quantity and the MSDS date.

<u>Chemical Name</u>	<u>Department</u>	<u>Storage Area</u>	<u>Quantity</u>	<u>MSDS Date</u>
1.				
2.				
3.				

4.				
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Hazardous Chemical List

Hazardous chemicals present at worksites and for which MSDSs are on file should be listed in the front of the MSDS manual. The list should have both the manufacturer's name and the trade names of each chemical. Any new chemical received should be added to the list immediately. The **safety officer or supply purchaser** will be responsible for maintaining the chemical list.

Material Safety Data Sheets (MSDS)

MSDSs prepared by the chemicals manufacturer and sent by the supplier shall be used to provide information to the employees. The **safety officer or supply purchaser** has the responsibility of ensuring MSDSs are received on all purchased hazardous chemicals upon receipt of the product. When MSDSs are not received, a letter should be sent or a telephone call placed to the manufacturer requesting the MSDS. A record of all correspondence and phone calls will be kept to comply with state and federal regulations covering these requirements.

Copies of MSDSs are to be kept on file at **(locations files kept)** are available for employee review at any time. MSDSs should also be located in the jobsite trailer or in company vehicle. Any missing, incomplete or inaccurate MSDSs are to be reported to the **safety officer or supply purchaser** who will order an updated copy from the manufacturer. MSDSs should be retained for 30 years as part of medical records retention rules under 29 CFR 1910.1020.

MSDS Requirements

Obtain from distributor or manufacturer.

Written in English. You can also obtain other languages, but we must have an English version available. Readily accessible within employee work area. They can be electronic, but employee must know how to obtain, and they must be available should there be loss of power.

It's recommended to keep the lists forever. They may be used for legal purposes should an exposure occur with an old chemical.

Establish an MSDS renewal plan that best fits our work place—annual, quarterly, every shipment. We must update the data sheets every three years. If there are no changes, then indicate on current copy that an attempt was made to obtain a new copy.

There is no standard format, but the MSDS must list the following:

- Chemical identity on label
- Chemical and common name
- Chemical and common name of all ingredients if it's a mixture
- Physical and chemical characteristics
- Physical hazards
- Health hazards
- Routes of entry
- Exposure limits
- Carcinogen or not
- Precautions for safe handling and use
- Hazard control measures
- Emergency and first aid procedures

- Date of preparation or last change
- Contact information of manufacturer

Labeling

1. For hazardous chemicals purchased from suppliers, our company relies on labeling information provided by the suppliers. Existing labels will not be removed or defaced unless the container is immediately relabeled with the trade name and hazard warnings. Missing or defaced labels will be replaced as soon as possible. All employees should report missing or defaced labels to their supervisor immediately.
2. When hazardous chemicals are transferred from the original container to transfer/use containers, the latter must be labeled with trade name and hazard warnings.
3. Labels for transfer/use containers will either be obtained from the supplier or will be prepared by the **safety officer or supply purchaser**.
4. The **safety officer or supply purchaser** will be responsible for labeling containers.

Labeling Requirements

Each container must be labeled, tagged or marked with the identity of hazardous chemicals contained therein, and must show hazard warnings appropriate for employee protection. The hazard warning can be any type of message, words, pictures or symbols that provide at least general information regarding the hazards of the chemical(s) in the container and the targeted organs affected, if applicable. Labels must be legible, in English (plus other languages, if desired) and prominently displayed.

Informing and Training Employees

General Training

All current employees subject to exposure to hazardous chemicals will receive basic training on the following topics:

- The Hazard Communication Standard.
- Description of MSDSs and how to read them.
- Container labels or other forms of warning and how to read and interpret hazard information.
- Location and availability of this program.
- Location and availability of the Hazardous Chemical list and MSDSs for review.
- General methods and observations that may be used to detect the presence of a hazardous chemical.

Specific Training

- Employees must be trained in the hazards and protective measures for each hazard to which they have significant potential for exposure.
- Employees must be informed when new hazards are introduced in their work area and trained on correct handling and work procedures involving the product.
- Employees will be provided with personal protective equipment and properly trained in its use when conditions warrant its use or when an employee requests it.
- When non-routine tasks are to be performed by employees, they shall review chemical hazards associated with the process with their supervisor prior to commencement of the task. Training will be conducted covering safe use of the chemicals involved, hazards of exposure and protective equipment use to prevent exposure to the chemicals.

Training Documentation



- Document the date, time, topic covered and who attended.
- General employee training is ideal during the new employee safety orientation.
- Have a detailed session for those who work or handle the hazardous chemicals.
- Chemicals can be explained and grouped together or a session on each chemical can be held.
- No time length is required for the session.
- Designate person(s) responsible for conducting training.
- Document the format of the program (audio visual, classroom, etc.).

Informing Subcontractors

Before a contractor is to initiate work, they should be provided the following:

1. A list of the chemicals in the area where they will be working.
 2. Copies of any MSDSs they request for further review.
 3. The location of additional information as needed during the visit.
- The contractor must provide a copy of the MSDSs they will be using at the worksite.
 - The **safety officer or supervisor** must inform employees of the chemical hazards associated with the contractor's work and have MSDSs available for review if requested.
 - The contractor shall sign the certificate verifying the above requirements have been met.

Visiting Contractor Hazard Communication Regulation Awareness Form

I certify that as an authorized representative of my company, I have been given or shown a copy of the  **PUTZHEIM CRESCENT INCORPORATED** hazardous chemical list, shown any MSDSs I requested and informed as to how I can get additional information if required. Furthermore, I have (or my company has) provided  **PUTZHEIM CRESCENT INCORPORATED** with a hazardous chemical list and MSDSs for all chemicals my company will bring to a jobsite.

Company Name


Authorized Representative

Date

Hazard Communication Program
Employee Training Acknowledgment

Instructor

Date

The undersigned employees of  PUTZHEIM CRESCENT INCORPORATED acknowledge they have received hazard training (includes initial, non-routine task, and/or retraining) on the Hazard Communication Program and they have received instruction on the current hazardous chemicals in their work area, how to read the MSDSs and interpret hazard information, and protective measures to use with chemicals in use in their area.

Name

Signature

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Note:

Respiratory Protection

This program applies to all employees who are required to wear respirators during normal work operations and during some non-routine or emergency operations such as a spill of a hazardous substance. Any employee who voluntarily wears a respirator when it is not required is subject to the medical evaluation, cleaning, maintenance, and storage elements of this program, and must be provided with certain information specified in this section of the program. Engineering or administrative controls shall be considered before determining if a respirator is required. Examples can include substituting a less hazardous chemical for a specific application or ventilation controls that reduce inhalation exposures.

Responsibilities

Owner/CEO

The owner/CEO is responsible for selecting a Respirator Program Administrator. The owner/CEO will also ensure the program is implemented and trained by the Supervisors. The owner/CEO will provide the resources needed to purchase equipment and perform required medical testing.

Respirator Program Administrator

The Respirator Program Administrator is responsible for administering the respiratory protection program. Duties of the program administrator include:

- Identifying work areas, processes or tasks that require employees to wear respirators and evaluating hazards
- Selection of respiratory protection options
- Monitor respirator use to ensure that they are used in accordance with their certifications
- Arrange and/or conduct training
- Ensure proper storage and maintenance of respiratory protection equipment
- Conduct qualitative fit testing
- Administer the medical surveillance program
- Maintain records required by the program
- Investigate employee complaints with the employee's supervisor
- Evaluate the program
- Update written program, as needed

Our company's Respirator Program Administrator is **(David Draguta)**.

Supervisors

Supervisors are responsible for ensuring the respiratory protection program is implemented in their designated areas. Supervisors must also ensure the program is understood and followed by the employees under their charge. Duties of the supervisor include:

- Appropriate training for all employees under their supervision which includes fit testing and annual medical evaluation

- Ensuring the availability of appropriate respirators and accessories
- Knowing what tasks require the use of respiratory protection
- Enforcing the proper use of respiratory protection when necessary
- Ensuring the proper cleaning, maintenance and storage of the respirators
- Making sure all respirators fit well and do not cause discomfort
- Continuous monitoring of work areas and operations to identify respiratory hazards
- Coordinating with the Respirator Program Administrator to address respiratory hazards and/or personal training issues
- Investigate all complaints of respiratory issues together with the Program Administrator

Employees

Each employee has the responsibility to wear his or her respirator when required and in the manner in which they were trained.

Employees must also:

- Care for and maintain their respirators as instructed
- Inform their supervisor if the respirator no longer fits
- Obtain a new respirator when needed
- Inform their supervisor or the Respirator Program Administrator of any respiratory hazards they feel are not adequately addressed in the workplace and of any other concerns they have regarding the program
- Inform their supervisor if they are experiencing any respiratory problems

Program Elements

The Respirator Program Administrator will select respirators to be used on-site, based on the hazards to which employees are exposed and in accordance with OSHA standards. The Respirator Program Administrator will conduct a hazard evaluation for each operation, process or work area where airborne contaminants may be present in routine operations or during an emergency. The hazard evaluation will include:

1. Identification and development of a list of hazardous substances used in the workplace, by department or work process
2. Review of work processes to determine where potential exposures may occur. (Surveying the workplace, reviewing process records and discussions with employees and supervisors shall complete the review.)
3. Exposure monitoring to quantify potential hazardous exposures.

Sample Hazard Assessment
XYZ Carpentry Hazard Assessment—June 1998

Department	Contaminants	Exposure Level	(8 hrs TWA)* PEL	Controls
Prep: Sanding	wood dust	2.5-7.0 mg/m ³	5 mg/m ³ (TLV=1 mg/m ³)	Local exhaust ventilation (LEV) for sanders. Half- face piece APR with P100 filter.
Coating: Spray booth painting	toluene	(300 ppm)	200 ppm 500 ppm =10 min peak	Continuous flow SAR hood
	xylene	(40 ppm)	100 ppm 150 ppm= STEL	
	MEK (methyl ethyl ketone)	(25 ppm)	200 ppm	
	methanol	(20 ppm)	200 ppm	

Updating the Hazard Assessment

The Respirator Program Administrator will revise and update the hazard assessment as needed. If an employee feels respiratory protection is needed during a particular activity, he or she is to contact his or her supervisor. The Respirator Program Administrator will evaluate the potential hazard, arranging for outside assistance as necessary, and will then communicate the results to the employees.

Equipment Types

The respirator selected shall be based on the maximum protection for the hazard. “The 2004 NIOSH Respirator Selection Logic” shall be used to choose the correct respirator for employee hazard protection. This can be obtained at the NIOSH website, www.cdc.gov/niosh/docs/2005-100 or by calling 1-800-356-4674.

Respirator Types and Descriptions

Air-Purifying Respirators (APR)

Particulate Respirator

- Captures particles in the air, such as dusts, mists and fumes
- Does not protect against gases or vapors
- Becomes more effective as particles accumulate on the filter and plug spaces between the fibers
- Filters should be replaced when the employee finds it difficult to breath through them

Combination Respirators

- Normally used in atmospheres that contain hazards of both particulates and gases
 - Have both particulate filters and gas/vapor filters
 - May be heavier

Gas and Vapor Respirators

- Normally used when there are only hazardous gases and vapors in the air
- Use chemical filters (called cartridges or canisters) to remove dangerous gases or vapors
- Do not protect against airborne particles
- Made to protect against specific gases or vapors
- Provide protection only as long as the filter's absorbing capacity is not depleted
- The service life of the filter depends upon many factors and can be estimated in various ways

Air-Supplied Respirators

- Also known as Airline Respirators
- Makes use of a hose to deliver clean, safe air from a stationary source of compressed air
- Provide clean air for long periods of time and are lightweight for the user
- Limits the range of user-mobility and may fail due to hose damage
- Normally used when there are extended work periods required in atmospheres that **are not** immediately dangerous to life and health (IDLH)

Combination Respirators

Have an auxiliary self-contained air supply that can be used if the primary supply fails

The self-contained portion can be small since it only needs to supply enough air for escape

- Can be used for entry into confined spaces
- Are normally used when there are extended work periods required in atmospheres that *are or may be* immediately dangerous to life and health (IDLH)

Self-Contained Breathing Apparatus

- Consists of a wearable, clean-air supply pack
- Do not restrict movement with a hose connection
- The closed-circuit type can provide air up to four hours
- The open-circuit type only provide air for 30-60 minutes
- Are normally used when there is a short-time need to enter and escape from atmospheres that *are or may be* immediately dangerous to life and health (IDLH)

Medical Evaluation

Employees who are either required to wear respirators, or who choose to wear an APR voluntarily, must pass a medical exam before being permitted to wear a respirator on the job. Employees are not permitted to wear respirators until a physician has determined that they are medically able to do so. Any employee refusing the medical evaluation will not be allowed to work in an area requiring respirator use. A licensed physician will provide medical evaluations. Medical evaluation procedures are as follows:

- The medical evaluation will be conducted using the OSHA Respirator Medical Evaluation Questionnaire (Appendix C). The Program Administrator will provide a copy of the questionnaire to all employees requiring medical evaluations.
 - The company will assist employees who are unable to read the questionnaire (by providing help in reading the questionnaire).
 - A stamped and addressed envelope for will be provided to mail the questionnaire to the company physician.

- Follow-up medical exams will be granted to employees as required by the standard, and/or as deemed necessary by the medical provider.
- A copy of the Respiratory Protection Program will be provided to the medical provider to include:
 - A list of hazardous substances by work area
 - Each employee requiring evaluation to include his or her work area or job title
 - The proposed respirator type and weight
 - Length of time required to wear respirator
 - Expected physical work load (light, moderate, or heavy)
 - Potential temperature and humidity extremes
 - Any if additional protective clothing required
- Any employee required to wear a positive pressure air-purifying respirator will be provided with a powered air-purifying respirator
- After an employee has received clearance and has begun to wear a respirator, additional medical evaluations will be provided under the following circumstances:
 - Employee reports signs and/or symptoms related to their ability to use a respirator, such as shortness of breath, dizziness, chest pains or wheezing.
 - The medical provider or supervisor informs the Program Administrator that the employee needs to be reevaluated.
 - Information from this program, including observations made during fit testing and program evaluation, indicates a need for reevaluation.
 - A change occurs in workplace conditions that may result in an increased physiological burden on the employee.

Fit Testing

Employees who are required to wear half-face piece APRs will be fit tested:

- Prior to being allowed to wear any respirator with a tight fitting face piece
- When there are changes in the employee's physical condition that could affect respiratory fit (e.g., obvious change in body weight, facial scarring, etc.)
- Employees will be fit tested with the make, model, and size of respirator that they will actually wear. Employees will be provided with several models and sizes of respirators so they may find an optimal fit.
- The Respirator Program Administrator will conduct fit tests following the OSHA approved Bitrex Solution Aerosol QLFT Protocol in Appendix B (B4) of the Respiratory Protection Standard.

General Use Procedures

- Employees will use their respirators under conditions specified by this program and in accordance with the training they receive on the use of each particular model. In addition, the respirator shall not be used in a manner for which it is not certified by NIOSH or by its manufacturer.
- Employees shall conduct user seal checks each time they wear their respirator.
- Employees shall be permitted to leave the work area to maintain their respirator for the following reasons: to clean their respirator if the respirator is impeding their ability to work, change filters or cartridges, replace parts or to inspect respirator if it stops functioning as intended. Employees should notify their supervisor before leaving the area.

- Employees are not permitted to wear tight-fitting respirators if they have any condition such as facial scars, facial hair, or missing dentures, which prevents them from achieving a good seal. Employees are not permitted to wear headphones, jewelry or other articles that may interfere with the face piece-to-face seal.

Emergency Procedures

The following work areas has been identified as having foreseeable emergencies:

List emergency situations and responses.

Example:

APR Respirator Malfunction

For any malfunction of an APR (e.g., breakthrough, face piece leakage, or improperly working valve), the respirator wearer should inform the supervisor that the respirator no longer functions as intended and go to the designated safe area to maintain the respirator. The supervisor must ensure the employee receives the needed parts to repair the respirator or is provided with a new respirator.

All employees wearing atmosphere-supplying respirators will work with a buddy. Buddies shall assist employees who experience an Supplied Air Respirator (SAR) malfunction as follows:

If a worker in the spray booth experiences a malfunction of a SAR, he or she should signal to the buddy that there is a respirator malfunction. The buddy shall don an emergency escape respirator and aid the employee in immediately exiting the spray booth.

IDLH (Immediately Dangerous to Life and Health) Procedures

The Respirator Program Administrator shall identify areas presenting the potential for IDLH conditions and will develop an escape plan for an exposed employee. This escape plan would allow the exposed employee to avoid loss of life, immediate and/or delayed health effects or eye injury.

Cleaning the Respirator

Program administrators will reference National Institute for Occupational Safety and Health (NIOSH) website (www.cdc.gov/niosh/respcn.html) for respirator cleaning and sanitation procedures.

Respirators are to be regularly cleaned and disinfected as trained. Respirators issued for the exclusive use of an employee shall be cleaned as often as necessary, but at least once a day.

Atmosphere-supplying and emergency use respirators are to be cleaned and disinfected after each use.

The following procedure is to be used when cleaning and disinfecting respirators:

- Disassemble respirator, removing any filters, canisters or cartridges.
- Wash the face piece and associated parts in a mild detergent with warm water. Do not use organic solvents.
- Rinse completely in clean warm water.
- Wipe the respirator with disinfectant wipes (70% Isopropyl Alcohol) to kill germs.
- Air dry in a clean area.

- Reassemble the respirator and replace any defective parts.
- Place in a clean, dry plastic bag or other airtight container.

Note: The Respirator Program Administrator will ensure an adequate supply of appropriate cleaning and disinfecting products. If supplies are low, employees should contact their supervisor, who will then inform the Respirator Program Administrator.

Maintenance

Respirators are to be properly maintained at all times in order to ensure they function properly and adequately protect the employee. Maintenance involves a thorough visual inspection for cleanliness and defects. Worn or deteriorated parts will be replaced prior to use. No components will be replaced or repairs made beyond those recommended by the manufacturer. The manufacturer will conduct repairs to regulators or alarms of atmosphere-supplying respirators.

The following checklist will be used when inspecting respirators:

- Face piece
 - cracks, tears or holes
 - face mask distortion
 - cracked or loose lenses/face shield
- Head straps
 - breaks or tears
 - broken buckles
- Valves
 - residue or dirt
 - cracks or tears in valve material
- Filters/Cartridges
 - gaskets
 - cracks or dents in housing
 - proper cartridge for hazard
- Air Supply Systems
 - breathing air quality/grade
 - condition of supply hoses
 - hose connections
 - settings on regulators and valves

Employees are permitted to leave their work area to perform limited maintenance on their respirator in a designated area that is free of respiratory hazards.

Change Schedules

The Respirator Program Administrator will:

- Develop the change schedules for the respirator devices used by employees
- Will reference NIOSH and OSHA guidelines for specific testing and identification of the particular respirator used by employees.
- Will implement the change schedule
- Will train employees in the signs that require a respirator change.

Storage

Respirators must be stored in a clean, dry area, and in accordance with the manufacturer's recommendations. Each employee will clean and inspect their own air-purifying respirator in accordance with the provisions of this program and will store their respirator in a plastic bag in their own locker. Each employee will have his/her name on the bag and that bag will only be used to store that employee's respirator.

Atmosphere-supplying respirators will be stored in the storage cabinet outside of the Respirator Program Administrator's office.

The Program Administrator will store the supply of respirators and respirator components in their original manufacturer's packaging in the equipment storage room.

Defective Respirators

Respirators that are defective or have defective parts shall be taken out of service immediately. If, during an inspection, an employee discovers a defect in a respirator, he or she is to bring the defect to the attention of the supervisor. Supervisors will give all defective respirators to the Respirator Program Administrator. The Program Administrator will decide whether to:

- Temporarily take the respirator out of service until it can be repaired.
- Perform a simple fix on the spot, such as replacing a head strap.
- Dispose of the respirator due to an irreparable problem or defect.

When a respirator is taken out of service for an extended period of time, the respirator will be tagged out of service, and the employee will be given a replacement of similar make, model and size. All tagged out respirators will be kept in the storage cabinet inside the Respirator Program Administrator's office.

Training

The Respirator Program Administrator will provide training to respirator users and their supervisors. The training course will cover the following topics:

- The Respiratory Protection Program
- The OSHA Respiratory Protection standard
- Potential respiratory hazards and their health effects
- Proper selection and use of respirators
- Limitations of respirators
- Respirator donning and user seal (fit) checks
- Fit testing
- Emergency use procedures
- Maintenance and storage
- Medical signs and symptoms limiting the effective use of respirators

Employees will be retrained annually or as needed (e.g., if they change departments and need to use a different respirator). Employees must demonstrate their understanding of the topics covered in the training through hands-on exercises and a written test. The Respirator Program Administrator will document respirator training and the documentation will include the type, model and size of respirator for which each employee has been trained and fit tested.

Program Evaluation

The Respirator Program Administrator will conduct periodic evaluations of the workplace to ensure the provisions of this program are being implemented. The evaluations will include regular consultations with employees who use respirators and their supervisors, site inspections, air monitoring and a review of records.

Problems identified will be noted in an inspection log and addressed by the Respirator Program Administrator. These findings will be reported to management and will specify plans to correct deficiencies in the respirator program and target dates for the implementation of those corrections.

Documentation and Recordkeeping

The Respirator Program Administrator will maintain:

- A written copy of this program and the OSHA standard. It will be kept in the Respirator Program Administrator's office and is available to any employee who wishes to review it.
- A copy of training and fit test records. These records will be updated as new employees are trained, when an employee changes a position that requires a different type of respirator, as existing employees receive refresher training and as new test are conducted.
- Copies of the medical records for all employees covered under the respirator program.

The completed medical questionnaire and the physician's documented findings are confidential and will remain at medical provider's location. The company will only retain the physician's written recommendation regarding each employee's ability to wear a respirator.

Please refer to the Missouri Department of Labor and Industrial Relations website (www.dolir.state.mo.us/lr/safetyconsultation/employer_assistance/RespiratoryP...) for a sample Respiratory Protection Program.

**Appendix C to 1910.134: OSHA Respirator Medical Evaluation Questionnaire
(Mandatory)**

To the employer: Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

To the employee:

Can you read (circle one): Yes/No

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. (Mandatory) The following information must be provided by every employee who will be selected or has been selected to use any type of respirator (please print).

1. Today's date: _____

2. Your name: _____

3. Your age (to nearest year): _____

4. Sex (circle one): Male/Female

5. Your height: _____ ft. _____ in.

6. Your weight: _____ lbs.

7. Your job title: _____

8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code): _____

9. The best time to phone you at this number: _____

10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes/No

11. Check the type of respirator you will use (you can check more than one category):

- a. ____ N, R, or P disposable respirator (filter-mask, non-cartridge type only).
- b. ____ Other type (for example, half- or full-face piece type, powered-air purifying, supplied-air, self-contained breathing apparatus).

12. Have you worn a respirator (circle one): Yes/No

If "yes," what type(s)?

Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month: Yes/No
2. Have you ever had any of the following conditions?
 - a. Seizures (fits): Yes/No
 - b. Diabetes (sugar disease): Yes/No
 - c. Allergic reactions that interfere with your breathing: Yes/No
 - d. Claustrophobia (fear of closed-in places): Yes/No
 - e. Trouble smelling odors: Yes/No
3. Have you ever had any of the following pulmonary or lung problems?
 - a. Asbestosis: Yes/No
 - b. Asthma: Yes/No
 - c. Chronic bronchitis: Yes/No
 - d. Emphysema: Yes/No
 - e. Pneumonia: Yes/No
 - f. Tuberculosis: Yes/No
 - g. Silicosis: Yes/No
 - h. Pneumothorax (collapsed lung): Yes/No
 - i. Lung cancer: Yes/No
 - j. Broken ribs: Yes/No
 - k. Any chest injuries or surgeries: Yes/No
 - l. Any other lung problem that you've been told about: Yes/No
4. Do you currently have any of the following symptoms of pulmonary or lung illness?
 - a. Shortness of breath: Yes/No
 - b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes/No
 - c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes/No
 - d. Have to stop for breath when walking at your own pace on level ground: Yes/No
 - e. Shortness of breath when washing or dressing yourself: Yes/No
 - f. Shortness of breath that interferes with your job: Yes/No
 - g. Coughing that produces phlegm (thick sputum): Yes/No
 - h. Coughing that wakes you early in the morning: Yes/No
 - i. Coughing that occurs mostly when you are lying down: Yes/No
 - j. Coughing up blood in the last month: Yes/No
 - k. Wheezing: Yes/No
 - l. Wheezing that interferes with your job: Yes/No
 - m. Chest pain when you breathe deeply: Yes/No
 - n. Any other symptoms that you think may be related to lung problems: Yes/No
5. Have you ever had any of the following cardiovascular or heart problems?

- a. Heart attack: Yes/No
 - b. Stroke: Yes/No
 - c. Angina: Yes/No
 - d. Heart failure: Yes/No
 - e. Swelling in your legs or feet (not caused by walking): Yes/No
 - f. Heart arrhythmia (heart beating irregularly): Yes/No
 - g. High blood pressure: Yes/No
 - h. Any other heart problem that you've been told about: Yes/No
6. Have you ever had any of the following cardiovascular or heart symptoms?
- a. Frequent pain or tightness in your chest: Yes/No
 - b. Pain or tightness in your chest during physical activity: Yes/No
 - c. Pain or tightness in your chest that interferes with your job: Yes/No
 - d. In the past two years, have you noticed your heart skipping or missing a beat: Yes/No
 - e. Heartburn or indigestion that is not related to eating: Yes/No
 - f. Any other symptoms that you think may be related to heart or circulation problems: Yes/No
7. Do you currently take medication for any of the following problems?
- a. Breathing or lung problems: Yes/No
 - b. Heart trouble: Yes/No
 - c. Blood pressure: Yes/No
 - d. Seizures (fits): Yes/No
8. If you've used a respirator, have you ever had any of the following problems? (If you've never used a respirator, check the following space and go to question 9:)
- a. Eye irritation: Yes/No
 - b. Skin allergies or rashes: Yes/No
 - c. Anxiety: Yes/No
 - d. General weakness or fatigue: Yes/No
 - e. Any other problem that interferes with your use of a respirator: Yes/No
9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: Yes/No

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-face piece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you ever lost vision in either eye (temporarily or permanently): Yes/No
11. Do you currently have any of the following vision problems?
- a. Wear contact lenses: Yes/No
 - b. Wear glasses: Yes/No
 - c. Color blind: Yes/No
 - d. Any other eye or vision problem: Yes/No
12. Have you ever had an injury to your ears, including a broken ear drum: Yes/No

13. Do you currently have any of the following hearing problems?

- a. Difficulty hearing: Yes/No
- b. Wear a hearing aid: Yes/No
- c. Any other hearing or ear problem: Yes/No

14. Have you ever had a back injury: Yes/No

15. Do you currently have any of the following musculoskeletal problems?

- a. Weakness in any of your arms, hands, legs, or feet: Yes/No
- b. Back pain: Yes/No
- c. Difficulty fully moving your arms and legs: Yes/No
- d. Pain or stiffness when you lean forward or backward at the waist: Yes/No
- e. Difficulty fully moving your head up or down: Yes/No
- f. Difficulty fully moving your head side to side: Yes/No
- g. Difficulty bending at your knees: Yes/No
- h. Difficulty squatting to the ground: Yes/No
- i. Climbing a flight of stairs or a ladder carrying more than 25 lbs: Yes/No
- j. Any other muscle or skeletal problem that interferes with using a respirator: Yes/No

Part B Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen: Yes/No

If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions: Yes/No

2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: Yes/No

If "yes," name the chemicals if you know them:

3. Have you ever worked with any of the materials, or under any of the conditions, listed below:

- a. Asbestos: Yes/No
- b. Silica (e.g., in sandblasting): Yes/No
- c. Tungsten/cobalt (e.g., grinding or welding this material): Yes/No
- d. Beryllium: Yes/No
- e. Aluminum: Yes/No
- f. Coal (for example, mining): Yes/No
- g. Iron: Yes/No
- h. Tin: Yes/No
- i. Dusty environments: Yes/No

j. Any other hazardous exposures: Yes/No

If "yes," describe these exposures:

4. List any second jobs or side businesses you have:

5. List your previous occupations:

6. List your current and previous hobbies:

7. Have you been in the military services? Yes/No

If "yes," were you exposed to biological or chemical agents (either in training or combat): Yes/No

8. Have you ever worked on a HAZMAT team? Yes/No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): Yes/No

If "yes," name the medications if you know them:

10. Will you be using any of the following items with your respirator(s)?

- a. HEPA Filters: Yes/No
- b. Canisters (for example, gas masks): Yes/No
- c. Cartridges: Yes/No

11. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?:

- a. Escape only (no rescue): Yes/No
- b. Emergency rescue only: Yes/No
- c. Less than 5 hours per week: Yes/No
- d. Less than 2 hours per day: Yes/No
- e. 2 to 4 hours per day: Yes/No
- f. Over 4 hours per day: Yes/No

12. During the period you are using the respirator(s), is your work effort:

- a. Light (less than 200 kcal per hour): Yes/No

If "yes," how long does this period last during the average shift: _____hrs. _____mins.

Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.

b. Moderate (200 to 350 kcal per hour): Yes/No

If "yes," how long does this period last during the average shift: _____ hrs. _____ mins.

Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

c. Heavy (above 350 kcal per hour): Yes/No

If "yes," how long does this period last during the average shift: _____ hrs. _____ mins.

Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator: Yes/No

If "yes," describe this protective clothing and/or equipment:

14. Will you be working under hot conditions (temperature exceeding 77° F): Yes/No

15. Will you be working under humid conditions: Yes/No

16. Describe the work you'll be doing while you're using your respirator(s):

17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases):

18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):

Name of the first toxic substance:

Estimated maximum exposure level per shift:

Duration of exposure per shift

Name of the second toxic substance:

Estimated maximum exposure level per shift:

Duration of exposure per shift:

Name of the third toxic substance:

Estimated maximum exposure level per shift:

Duration of exposure per shift:

The name of any other toxic substances that you'll be exposed to while using your respirator:

19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security): _____

Blood Borne Pathogens

Blood borne pathogens are microorganisms found in human blood, which can cause diseases in humans. Human blood can be found in the following blood, semen, feces, amniotic fluid, saliva and several other bodily fluids. Infectious diseases, which are associated with exposure to blood borne pathogens, include HIV, hepatitis B and C, malaria, syphilis, viral hemorrhagic fever and several others. Exposure to blood borne pathogens will be infrequent for the majority of employees. Any operations, which may result in a cut, puncture or amputation could expose employees to blood borne pathogens. Proper work methods and use of personal protective equipment are required when the presence of human blood is anticipated. Only trained first aid responders should provide first aid or clean up a blood-laden site or equipment. The following chart outlines the duties that could expose employees.

Exposure by Job Duties

CEO/President	<ul style="list-style-type: none"> • Inspecting a location, which contains infected material • Assisting an injured employee who might be bleeding
Supervisor/Manager	<ul style="list-style-type: none"> • Inspecting a location which contains infected material • Assisting an injured employee who might be bleeding
Employee	<ul style="list-style-type: none"> • Inspecting a location that might contain infected material • Assisting an injured employee who might be bleeding • Carrying trash bags that might contain needles or infected material
Maintenance Employee	<ul style="list-style-type: none"> • Carrying trash bags that might contain needles or infected material • Normal cleaning of jobsite area
First Aid Responder	<ul style="list-style-type: none"> • Assisting an injured employee with first aid or CPR • Clean up of blood

All suspicious material should be treated as if it were infected with a blood borne pathogen. This approach to infection control is called universal precautions. Universal precautions should be implemented whenever a blood borne pathogen's presence is in question or known. Universal precautions are a combination of work practices and use of personal protective equipment used to protect employees from exposure to all human blood or other potentially infected material.

Work Practices for Blood Borne Pathogen Cleaning

- Eating, drinking, smoking, applying cosmetics or lip balm and handling contact lenses are prohibited in work areas where there is a likelihood of exposure.
- All procedures involving blood shall be performed in such a manner as to minimize splashing, spraying and splattering.

- Personal protective equipment shall be worn at all times while handling blood laden material.
- All employees shall wash their hands and exposed skin with soap and water as soon as possible when handling a blood laden material. This applies even when personal protective equipment is worn.
- If skin is exposed directly to a blood laden material, it should be washed immediately. If washing facilities are not easily accessible, non-water antibacterial gel should be used immediately. The exposed area should be washed with soap and water as soon as possible.
- All personal protective equipment shall be removed as soon as possible upon leaving the work area and placed in designated containers for storage or washing.
- All contaminated trash shall be placed in a leak proof disposable container or trash bag.
- All unprotected exposures, puncture with a potentially contaminated object or other exposure situations shall be reported to the employee's direct supervisor.
- All unprotected exposures shall be reported with an Employer's First Report of Injury Form immediately.
- Provision for hepatitis B vaccination series shall be made available as soon as possible but no later than 24 hours after exposure for all exposed employees.

Personal Protective Equipment for Handling Blood Borne Pathogens

- Latex or rubber gloves shall be worn when blood-laden materials are handled.
- Splash proof goggles shall be worn when there is an exposure of blood-laden material being splashed in the eyes of the employee. Ex: Wash blood off a wall with liquid.
- Disposable aprons or full-body work clothing shall be worn whenever potential clothing contamination exists.
- If non-disposable clothing is worn, proper laundry handling procedures should be followed.

Laundry Procedures

Laundry, which is contaminated with blood or potentially infectious materials, should be handled as little as possible. Gloves should be worn in the handling process. All infected laundry should be transported in a leak proof bag to laundering site. A minimum of hot water and normal household bleach solution should be used in the laundering process. All pre-laundering sorting surfaces should be clean with a one-part bleach to ten-part water mixture.

Surface Cleaning Procedures

Contaminated walls or other surfaces should be cleaned with an approved hospital disinfectant germicide containing a virucide or household bleach solution (5.25 percent concentration) in a solution of one-part bleach to ten-part water. Examples of potentially contaminated surfaces include bathroom fixtures and bathroom walls.

Caution should be taken when using a bleach solution. Bleach can also irritate the respiratory system of some individuals. Bleach solutions should be used in a well-ventilated area. If bleach is a possible irritant to an individual, another disinfectant should be used.

Trash Disposal

All dry contaminated trash should be stored in a container or plastic bag and thrown in the normal trash. All wet contaminated trash should be placed in a red biohazard bag or biohazard marked container. The

marked containers should be taken to a licensed hazardous waste hauler. All trash known to have human blood on it should still be handled with gloves. Hand washing procedures should also be followed. Do not dampen dry trash.

Cleanup

All reusable cleaning items should be disinfected. This includes rubber gloves, buckets, mops, sponges and other cleaning items. Use the same method for cleaning surfaces listed above.

Hand washing facilities are located:

Post Exposure

If an employee has had a known exposure to a blood borne pathogen, they should be offered the hepatitis B vaccination series within 24 hours of exposure at no cost to the employee.

A confidential medical evaluation and follow-up including documentation of the route of exposure and circumstances under which the exposure occurred, and source individual unless prohibited by law after exposure. The source's blood shall be tested. If consent is not obtained, follow procedure as noted in OSHA's regulation. Results of testing must be made available to exposed employee and applicable laws followed. The exposed employee's blood must also be tested. If consent is not obtained then the employee must sign a waiver, but can re-elect to be tested at a later date. The employee can receive counseling for exposure.

Incident Analysis

A hazard analysis of the specific incident needs to be conducted by the supervisor or one who has authority to make safety decisions within the company to make the necessary changes so the incident does not occur again.

First Aid Responder

The hepatitis B vaccination series is available at no cost after initial employee training and within ten days. Vaccination is encouraged unless:

1. documentation exists that the employee has previously received the series;
2. antibody testing reveals that the employee is immune; or
3. medical evaluation shows that vaccination is contraindicated.

Housekeeping

Good housekeeping is a necessary requirement for maintaining safety at all workplaces. Clean and tidy work sites hold fewer hazards for all employees. Accidents and injuries are avoided and productivity improved where good housekeeping is a daily occurrence.

General Information

Good housekeeping is possibly the most visible evidence of management and employee concern for safety and health on a day-to-day basis. An orderly workplace contributes to a safe working environment by minimizing obstacles and potential safety and health threats such as spills, trip hazards, etc.

Reasons for housekeeping:

- Prevents accidents.
- Prevents fire.
- Saves time.
- Gives control to employees.
- Increases production.
- Gives employees the freedom to move.
- Gives employees pride.
- Protects products and equipment.
- Reduces waste.

No program can be successful without employee participation. Employees shall be trained in housekeeping procedures.

Walk-Around Assessment

- The safety coordinator or safety committee will walk around the facility for an assessment to identify main housekeeping issues.
- Employees will look for a lack of order, unremoved spills or obstructions or other hazards due to poor organization or poor housekeeping.
- Employees working in each area will identify and recommend corrective actions for their area.
- Grounds will be inspected for refuse or an untidy appearance due to storing materials haphazardly.
- In addition, they will check the OSHA Form 300 to see if one or more incidents such as slips, trips, falls or other types of accidents were related in some way to poor housekeeping.
- Any hazards found need to be addressed. The nature of the hazard will dictate the speed with which the hazard is addressed. A procedure should be developed to follow up on all noted hazards.

- Copies of the walk-around assessment will be maintained by the safety coordinator and distributed among management.

Storage and Scrap Areas

The method of storage and materials handling requires the following housekeeping measures:

Open yard storage housekeeping procedures include:

- Combustible materials must be piled paying attention to the stability of piles and in no case higher than 20 feet.
- Driveways between and around combustible storage piles must be at least 15 feet wide and maintained free from accumulation of rubbish, equipment or other articles or materials. Driveways must be spaced so a maximum grid system unit of 50 feet by 150 feet is produced.
- The entire storage site must be kept free from accumulation of unnecessary combustible materials. Weeds and grass must be kept down and a regular procedure provided for the periodic cleanup of the entire area.
- When there is a danger of an underground fire, that land must not be used for combustible or flammable storage.
- The method of piling must be solid wherever possible and in orderly, regular piles. No combustible material may be stored outdoors within 10 feet of a building or structure.

Indoor storage housekeeping measures:

- Storage may not obstruct, or adversely affect, means of exit.
- All materials must be stored, handled and piled with due regard to their fire characteristics.
- Non-compatible materials that may create a fire hazard must be segregated by a barrier having a fire resistance of at least one hour.
- Material must be piled to minimize the spread of fire internally and to permit convenient access for firefighting. Stable piling shall be maintained at all times. Aisle space shall be maintained to safely accommodate the widest vehicle that may be used within the building for firefighting purposes.
- Clearance of at least 36 inches must be maintained between the top level of the stored material and the sprinkler deflectors.
- Clearance must be maintained around lights and heating units to prevent ignition of combustible materials.
- A clearance of 24 inches must be maintained around the path of travel of fire doors unless a barricade is provided, in which case no clearance is needed. Material must not be stored within 36 inches of a fire door opening.

Chemical Storage

Flammable and combustible substances are stored in the following storage areas:

- **Designated Areas**
- Flammable and combustible substance storage is not allowed in office areas unless it is required for maintenance and operation of building and storage shall be limited to less than 20 gallons of a flammable or combustible chemical.

Aisles, Walkways, and Floor

- Provide sufficient safe clearances and access to any and all work stations, work areas, fire aisles, fire extinguishers, fire blankets, electrical disconnects, safety showers, other emergency aids, doors and access to stairways.
- Clearly mark to distinguish walkways from areas not for pedestrian traffic.
- Keep aisles and walkways free of physical obstructions that would prevent access, including path-blocking objects, liquid or solid spills and other obstructions.
- Keep aisles at least three feet wide where necessary for reasons of access to doors, windows, or standpipe connections.
- Keep stairs clean, dry, free of waste, well-lit and provided with adequate hand rails and treads that are in good condition.
- Keep floors clean, dry (dry as possible), slip-resistant, free of waste, unnecessary material, oil and grease, protruding nails, splinters, holes or loose boards.
- Provide an adequate number of waste receptacles at accessible locations throughout all work areas.

Production or Shop Areas

- Maintain adequate lighting systems in a clean and efficient manner and replace bulbs as soon as possible after failure.
- Properly maintain walls.
- Keep windows clean by washing them regularly.
- Keep blinds clean by washing regularly.
- Properly maintain doors and windows in a good working order and repair any damage to doors and windows as soon as possible.
- Provide adequate ventilation to all work areas to keep air free of dust and other contaminants.
- Maintain and clean all ventilation systems and HVAC systems at regular intervals.

Warehousing

- Keep all loading dock areas free of unnecessary materials.
- Have emergency spill kits and other spill clean-up equipment and materials available in the loading dock area.
- Clean up spills as soon as they occur.
- Keep all overhead doors clean and free of rust or dirt at hinges.

General Outside Area

- Keep the parts of buildings that are visible to public roads cleaned by washing them at regular intervals.
- Keep the other parts of buildings cleaned at regular intervals.
- Keep all doors and loading docks completely free of debris, shrubs or other obstructions.
- Maintain visibility through all windows by washing at regular intervals.
- Keep doors and windows properly maintained.
- Repair any damage to doors and windows at regular intervals.
- Provide any stairs or platforms adjacent to or leading into the building(s) with adequate rails, adequate treads, and an area clean and free of materials.
- Keep grounds neat and orderly, free of refuse and unnecessary materials.
- Store materials outdoors only in designated areas.

- Provide designated walkways, preferably paved and kept clear of snow, ice, materials or any other physical hazards.
- Provide a lighting system that is adequate to allow employees to navigate around the grounds as necessary at dusk and after dark.
- Maintain a neat landscaping appearance. Trim lawn, trees and shrubs in such a way as to minimize any possible safety hazards.
- Trim grass short enough to prevent trip hazards to employees.
- Prevent trees and shrubs from obstructing doors and windows.

Training

All employees, including maintenance and contractor employees, need to fully understand the safety and health hazards of poor housekeeping and improper chemical storage to protect themselves. Hazard communication training will help employees be more knowledgeable about the chemicals they work with as well as familiarize them with reading and understanding MSDSs. Employees will be trained in safe work practices, hazard reporting and other areas pertinent to housekeeping.

Ladders and Floor Openings

A ladder is an appliance consisting of two side rails joined at regular intervals by crosspieces on which a person may step to ascend or descend. The main hazard associated with using a ladder is falling. Falls from ladders at heights of only four feet can result in the death of an employee. A poorly designed, maintained or improperly placed ladder can collapse under the weight of an employee. The result can be a severe injury to the employee.

There are three types of portable ladders: step, single and extension. A step-ladder is self supporting and non-adjustable in length. A single ladder is a single, non-self supporting and non-adjustable in length. An extension ladder is a non-self supporting, adjustable in length portable ladder. Portable ladders can be constructed of wood, aluminum and fiberglass materials.

All portable ladders receive one of four ratings, based on their maximum working load (the maximum weight they can safely support).

Rating	Working Load
Extra heavy duty (I-A)	300 pounds
Heavy duty (I)	250 pounds
Medium duty (II)	225 pounds
Light duty (III)	200 pounds

Work Practices

The following work practices shall be followed when using a portable ladder:

- Place ladder on a secure footing.
- Hold ladder in a secure position with a tie off at the top.
- Extend ladder three feet above the point of support.
- Place the ladder at a pitch so the distance is one quarter the working length of the ladder.
- Face the ladder when climbing up or down.
- Short ladders shall not be spliced together to make a longer ladder.
- Never stand on the top step of a ladder. The third rung to the top is the highest an employee should climb on a ladder.
- Use both hands when climbing or descending.
- Never use a metal ladder while working near electrical equipment.
- Never use a ladder for a purpose other than climbing (i.e. no work platforms).
- Inspect the ladder before use.
- Never use a broken ladder.
- Never lean on the ladder. Your belly button should not pass the side rail.

- Never overload a ladder.
- Never place a ladder against a window or any type of piping.
- Never place a ladder in front of a door that opens out towards the ladder.
- Never attempt to carry tools or other objects while climbing a ladder.
- Extend both side rails out secure on a step ladder before climbing.

Ladder Maintenance

- Remove broken ladders from the job site. Repair or destroy to prevent reuse.
- Store ladders away from excessive heat and dampness whenever possible.
- Store ladders so they are easily accessible.
- Keep ladders clean and free of dirt or grease.
- Inspect and document ladders quarterly for defects.

Stairways Used During Construction

- Stairways that will not be a permanent part of the building under construction must have landings at least 30 inches deep and 22 inches wide (76 x 56 cm) at every 12 feet (3.7 m) or less of vertical rise.
- Stairways must be installed at least 30 degrees and no more than 50 degrees from the horizontal.
- Variations in riser height or stair tread depth must not exceed 1/4 inch in any stairway system.
- Doors and gates opening directly onto a stairway must have a platform that extends at least 20 inches (51 cm) beyond the swing of the door or gate.
- Metal pan landings and metal pan treads must be secured in place before filling.
- Stairway parts must be free of dangerous projections such as protruding nails.
- Slippery conditions on stairways must be corrected.
- Employees must not use spiral stairways that will not be a permanent part of the structure.

Temporary Stairs Used During Construction

- Except during construction of the stairway, do not use stairways with metal pan landings and treads if the treads and/or landings have not been filled in with concrete or other materials unless the pans of the stairs and/or landings are temporarily filled in with wood or other materials.
 - All treads and landings must be replaced when worn below the top edge of the pan.
 - Do not use skeleton metal frame structures and steps (where treads and/or landings will be installed later) unless the stairs are fitted with secured temporary treads and landings.
- Note:* Temporary treads must be made of wood or other solid material and installed the full width and depth of the stair.

Stair Rails

- Stairways with four or more risers or rising more than 30 inches (76 cm) in height, whichever is less, must be installed along each unprotected side or edge.
- When the top edge of a stair rail system also serves as a handrail, the height of the top edge must be no more than 37 inches (94 cm) nor less than 36 inches (91.5 cm) from the upper surface of the stair rail to the surface of the tread.
- Stair rails installed after March 15, 1991, must not be less than 36 inches (91.5 cm) in height.

- Top edges of stair rail systems used as handrails must not be more than 37 inches (94 cm) high nor less than 36 inches (91.5 cm) from the upper surface of the stair rail system to the surface of the tread. If installed before March 15, 1991, not less than 30 inches (76 cm).
- Stair rail systems and handrails must be surfaced to prevent injuries such as punctures or lacerations and to keep clothing from snagging.
- Ends of stair rail systems and handrails must be built to prevent dangerous projections, such as rails protruding beyond the end posts of the system.
- Unprotected sides and edges of stairway landings must have standard 42-inch (1.1 m) guardrail systems.
- Intermediate vertical members, such as balusters used as guardrails, must not be more than 19 inches (48 cm) apart.
- Other intermediate structural members, when used, must be installed so that no openings are more than 19 inches (48 cm) wide.
- Screens or mesh, when used, must extend from the top rail to the stairway step and along the opening between top rail supports.

Handrails

- Handrails and top rails of the stair rail systems must be able to withstand, without failure, at least 200 pounds (890 n) of weight applied within two inches (5 cm) of the top edge in any downward or outward direction, at any point along the top edge.
- Handrails must not be more than 37 inches (94 cm) high nor less than 30 inches (76 cm) from the upper surface of the handrail to the surface of the tread.
- Handrails must provide an adequate handhold for employees to grasp to prevent falls.
- Temporary handrails must have a minimum clearance of three inches (8 cm) between the handrail and walls, stair rail systems and other objects.
- Stairways with four or more risers, or that rise more than 30 inches (76 cm) in height, whichever is less, must have at least one handrail.
- Winding or spiral stairways must have a handrail to prevent use of areas where the tread width is less than six inches (15 cm).

Midrails

Midrails, screens, mesh, intermediate vertical members or equivalent intermediate structural members must be provided between the top rail and stairway steps to the stair rail system. When midrails are used, they must be located midway between the top of the stair rail system and the stairway steps.

Fixed Industrial Stairs

Fixed industrial stairs are interior and exterior stairs around machinery, tanks, and other equipment, and stairs leading to or from floors, platforms or pits. This section does not apply to stairs used for fire exit purposes, to construction operations, to private residences, or to articulated stairs, such as may be installed on floating roof tanks, the angle of which changes with the rise and fall of the base support. Fixed industrial stairs shall be provided for access to and from places of work where operations necessitate regular travel between levels. Requirements include:

- Strong enough to carry five times the normal anticipated live load
- At a minimum, able to carry safely a moving concentrated load of 1,000 pounds
- A minimum width of 22 inches

- Installed at angles to the horizontal of between 30 degrees and 50 degrees
- Vertical clearance above any stair tread to an overhead obstruction shall be at least seven feet measured from the leading edge of the tread.

Protection of Open-Sided Floors, Platforms and Runways

Every open-sided floor or platform four feet or more above adjacent floor or ground level shall be guarded by a standard railing on all open sides, except where there is an entrance to a ramp, stairway or fixed ladder. The railing shall be provided with a toeboard beneath the open sides wherever:

- persons may pass,
- there is moving machinery, or
- there is equipment with which falling materials could create a hazard.

Every runway shall be guarded by a standard railing, or the equivalent, on all sides four feet or more above floor or ground level. Wherever tools, machine parts or materials are likely to be used on the runway, a toeboard shall also be provided on each exposed side.

Regardless of height, open-sided floors, walkways, platforms or runways above or adjacent to dangerous equipment, pickling or galvanizing tanks, degreasing units and similar hazards shall be guarded with a standard railing and toeboard.

Wall Openings

Employees working on, at, above or near wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is six feet (1.8 meters) or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches (1 meter) above the walking/working surface must be protected from falling by the use of a guardrail system, a safety net system or a personal fall arrest system.

Floor Openings

Personal fall arrest systems, covers or guardrail systems shall be erected around holes (including skylights) that are more than six feet (1.8 meters) above lower levels. All hole covers must be able to support at least twice the weight of employees, equipment and materials that may be imposed on the cover at any one time. To prevent accidental displacement resulting from wind, equipment or employee activities, all covers must be secured. All covers shall be color-coded or bear the markings "HOLE" or "COVER."

Walking Surfaces

Housekeeping

- All places of employment, passageways, storerooms and service rooms shall be kept clean, orderly and in a sanitary condition.
- The floor of every workroom shall be maintained in a clean and, so far as possible, a dry condition. Where wet processes are used, drainage shall be maintained and gratings, mats or raised platforms shall be provided.
- Every floor, working place and passageway shall be kept free from protruding nails, splinters, holes or loose boards.

Aisles and Passageways

- Aisles and passageways shall be kept clear and in good repair with no obstruction across or in aisles that could create a hazard.
- Permanent aisles and passageways shall be appropriately marked.
- Where mechanical handling equipment is used, aisles shall be sufficiently wide. Improper aisle widths coupled with poor housekeeping and vehicle traffic can cause injury to employees, damage the equipment and material, and can limit egress in emergencies.

Floor Loading Protection

Load rating limits shall be marked on plates and conspicuously posted. It shall be unlawful to place or cause, or permit to be placed, a load greater than that for which such floor or roof is approved on any floor or roof of a building or other structure.

Training Requirements

Supervisors shall train all employees to recognize hazards related to ladders, walking surfaces and stairways, and instruct them to minimize these hazards. Examples include:

- Nature of fall hazards in the work area
- Correct procedures for erecting, maintaining and disassembling the fall protection systems to be used
- Proper construction, use, placement and care in handling of all stairways and ladders and
- Maximum intended load-carrying capacities of ladders used

Supervisors will retrain each employee as necessary to maintain their understanding and knowledge on the safe use and construction of ladders and stairs.

General Fall Protection Requirements

Hazard	Height at which fall protection is required	Fall Protection Options
Holes and Skylights	Holes and skylights that are six feet or more above lower levels	<ul style="list-style-type: none"> • Personal fall arrest systems • Personal fall restraint systems • Safety net systems • Guardrail systems • Covers
Wall Openings	Wall openings that have an outside bottom edge six feet or more above a lower level and an inside bottom edge less than 39 inches above the walking/working surface	<ul style="list-style-type: none"> • Personal fall arrest systems • Personal fall restraint systems • Safety net systems • Guardrail systems
Floors, mezzanines, established floors, balconies, walkways	Wall openings that have an outside bottom edge six feet or more above a lower level and an inside bottom edge less than 39 inches above the walking/working surface	<ul style="list-style-type: none"> • Personal fall arrest systems • Personal fall restraint systems • Safety net systems • Guardrail systems
Stairways	Stairway openings six feet deep or more	<ul style="list-style-type: none"> • Guardrail systems • Barricades • Covers

Ergonomics and Material Handling

This program applies to all operations, facilities and workstations. It provides a series of specific actions to be implemented with the ultimate goal of integrating ergonomics into every business decision. This process promotes continuous improvement in the efficiency, comfort and well being of all employees through a team effort of management and employee involvement.

Our objective is to fit the job and the work area to the employee over time by designing tasks so they are within the employee's capabilities and limitations. This action will lead to the reduction of musculoskeletal disorders (MSDs) and will in turn improve work quality and output, reduce fatigue and absences and reduce employee compensation costs associated with injuries and lost time.

Responsibilities

Owner/CEO

The Owner/CEO is responsible for ensuring an ergonomics program is implemented and employees are trained in the program. The owner/CEO shall also provide the resources required to purchase whatever equipment is needed.

Supervisors

Supervisors are responsible for training and implementing the ergonomics program. They will perform a hazard analysis of jobsite duties.

Employees

Employees are responsible for following the ergonomics program policies and procedures. Employees shall report all accidents and inform supervisors of ergonomic hazards.

Ergonomics Team/Coordinator

The Ergonomics Team/Coordinator is responsible for performing ergonomic assessment with the supervisors. They will also formulate solutions to ergonomics hazards.

Hazard Assessments

Ergonomics hazards will be addressed by performing Job Safety Analysis (JSA) reviews of ergonomics intensive job duties. The JSAs shall be conducted by the Supervisor or Ergonomics Team:

- Review normal job duties for signs of ergonomics problems
- Discuss job duties with employees for their opinion of ergonomics issues
- Review accident reports for prior ergonomics issues
- Conduct an ergonomics hazard analysis on this job duties
- Look for alternatives and solutions to lessen the ergonomics hazard

Investigate conditions

Try to find which jobs may be causing problems by: looking around your workplace, talking to employees and becoming aware of early warning signs:

- Employee fatigue or discomfort
- Employees restricting their movements or range of motion because of fatigue or discomfort (e.g., a stiff neck, sore shoulder, or backache)
- Employees modifying tools, equipment or workstations on their own
- High absenteeism or employee turnover rates
- Poor product or service quality
- Employee reports of problems

To determine which tasks to address first, consider the following:

- Frequency and severity of complaints, symptoms and injuries
- Contributing factors or other problems identified in a particular task
- Employee ideas for improvements
- Difficulty of implementing various improvements
- Time frame for making improvements
- Potential effects on productivity, efficiency and product or service quality
- Technical and financial resources

Musculoskeletal Disorders (MSD)

A musculoskeletal disorder (MSD) is an injury or disorder of the nervous system or soft tissue such as muscles, tendons, ligaments, joints, cartilage or blood vessels. MSD risk factors are major contributors to MSD-related injuries and illnesses. Prolonged exposure to one or more of the following risk factors puts you at risk of an MSD:

- Repetition/duration—Same motion over and over for long periods of each day, which includes daily and lengthy use of a keyboard or mouse
- Force—Constant lifting, pushing pulling
- Awkward postures
 - Working with back or neck bent down or twisted working with hands above head
 - Extending arms to type or sitting forward with hunched shoulders
 - Bent wrists when typing, using tools or operating equipment
- Contact stress
 - Using hand or knee as a hammer
 - Contact with a hard surface such as leaning against a counter
 - Continually pounding a stapler with palm
- Vibration—Using vibrating tools or equipment such as jackhammers or powered saws

Employees suffering from MSDs may display behaviors such as:

- Vigorously shaking hands as if trying to regain circulation
- Massaging hands, wrists or arms
- Cradling arms
- Limping
- Walking stiffly, indicating a sore back

The feeling of the pain varies depending on the MSD and can be described as tightness, stiffness, soreness, burning, tingling, coldness, numbness, or general discomfort. MSDs may affect the back, neck, shoulders, arms, legs, elbow and knee joints, hands, wrists, fingers, thumbs, feet and toes.

MSD Prevention Tips

Employees should report any MSD symptoms immediately to prevent further injury. Reducing employees' exposure to risk factors such as repetition, poor posture, forceful gripping, contact stress and vibration, will reduce their potential for suffering from an MSD-related injury. Suggested prevention measures include:

Avoiding Repetition

Avoiding repetition is the best defense in preventing an MSD-related injury. Keep the body in a neutral position when possible. When faced with risk factors of repetition including force, duration, awkward postures, contact stress and vibration, change movement as soon as the task is finished.

Paying Attention to Posture and Workspace

One of the best ways to reduce exposure to MSD risk factors is to adjust the workspace or workstation design to maintain a neutral posture as much as possible while working. Overall, the body should be in a relaxed and comfortable position.

Neutral posture should include the following elements:

- Head should be vertical and facing forward. Put work that is repetitive or of long duration (i.e., notes that need to be typed) in front of you to minimize head rotation.
- Maintain a straight back posture
- Shoulders should be in a neutral position with arms tucked close to your body and hanging relaxed. Elbows should be positioned comfortably below the shoulders and not extended outward from the body or forward or backward from your shoulders.
- Forearms should be parallel to the ground and wrists in a straight line with your forearms.
- Sit with thighs parallel to the floor, knees bent about 90 degrees and feet resting comfortably flat on the floor or on a footrest.

An Ergonomically Correct Workspace Includes

- Adjustable furniture
- Employee's ability to maintain neutral position and avoid awkward postures and extended reaches
- Variety of working positions available to avoid prolonged static postures
- Adequate room for a full range of body motion
- Easy access to all tools and equipment
- Work items in front of employee and within easy reach

Stretch muscles

- Hand stretches—Make a fist, then extend and spread fingers.
- Wrist and forearm stretches—Hold arms out in front of body and bend hands up and down. Place palms together with fingers pointed upward and elbows pointed out, bring hands down until you feel the stretch.

- Shoulder stretches—Shrug shoulders; roll shoulders forward and back. With elbows out, move arms back to bring shoulder blades together. Reach arms overhead and stretch; bend from side to side.
- Neck stretches—Rotate head up and down. Turn head from side to side. Tilt head toward each shoulder.
- Back and arm stretches—Put hands behind head and pinch shoulder blades together. Bend forward in chair and touch the floor. While sitting, grasp your shin or knee and pull knee toward your chest. Stand up, place hands on your hips and bend backwards.

Take breaks

- Eye breaks—Every 20 minutes look away from the monitor and focus on something at a distance of about 20 feet for a minute or so. This allows eye muscles to relax. Also, blink rapidly for a few seconds to refresh the eye's surface.
- Mini-break—Typing is typically done in short bursts. Between those bursts of activity, allow your hands to relax in a flat and straight posture. A mini-break is not a break from work; rather it is a break from using the typing or “mousing” muscles. Make a phone call or file some documents.
- Rest breaks—Take a short rest break every 30 to 60 minutes. Stand up and get a drink of water, make some photocopies, etc. Just get away from your computer workstation for a couple of minutes.

Corrective Action

Administrative improvements include changing work practices or the way work is organized.

- Provide variety in jobs.
- Adjust work schedules and work pace.
- Provide recovery time (i.e., muscle relaxation time).
- Modify work practices.
- Ensure regular housekeeping and maintenance of workspaces, tools and equipment.
- Encourage exercise.

Provide variety in jobs—There are a couple of ways to increase variety in jobs. Job rotation means rotating employees through different jobs. Job enlargement means increasing the variety by combining two or more jobs or adding tasks to a particular job. To be effective, both of these improvements rely on rotating through or combining jobs and tasks which differ in the following ways:

- Muscles or body parts used
- Working postures
- Amount of repetition
- Pace of work
- Amount of physical exertion required
- Environmental conditions



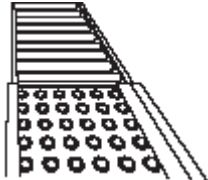


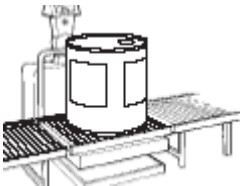
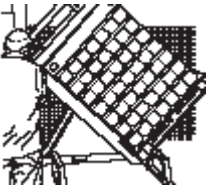
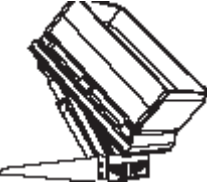
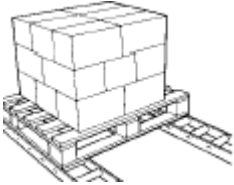



Adjusting work schedules and work pace—Try to limit the amount of time any employee has to spend performing a “problem job.” If you have new employees or employees returning from long absences, introduce them to a normal work pace and workload gradually. Try to break up work with frequent, short recovery periods. Even recovery periods as short as a few seconds on a regular basis are helpful.

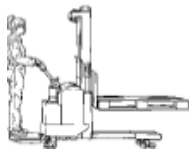
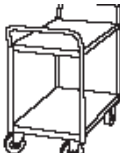

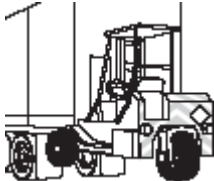


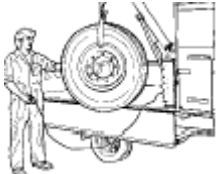

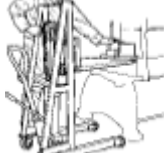

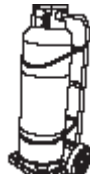




Modify work practices—Employees should be encouraged to be comfortable, to change positions and to stretch when working.

Employee Training

Employees shall be trained thoroughly and given opportunities for hands-on practice with any new tools, equipment or work procedures. The goals for training shall include a mix of the knowledge and the skills needed to work safely. Employees will be informed of any workplace changes.

Material Handling Assistive Equipment Charts (MHAEC)

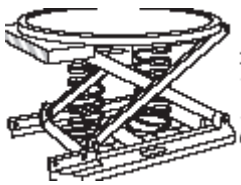
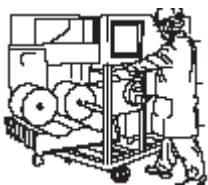
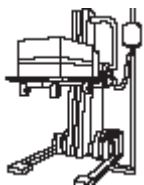




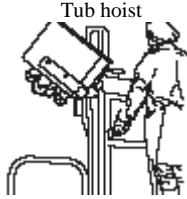



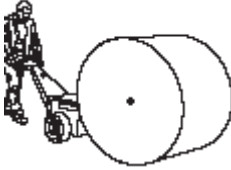



	Powered trucks and Trolleys, vehicles etc.	Non-powered trucks, trolleys and aids	Tracks, conveyors, slides/chutes/roller balls
Bag, sack, box, etc .handling	 Fork truck	 Truck with hydraulic lift	 Ball table and rollers
Bales, reels, barrel, drum, keg handling	 Drum/reel rotator	 Keg truck	 In-line weighing
Packing and unpacking pallets, stillages and containers	 Pallet converter	 Pallet tilter	 Roller track
Moving sheet materials	 Fork truck	 Pallet truck	 Gravity rollers

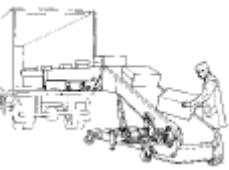

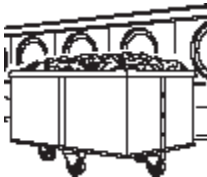


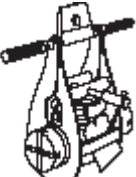






Storing, Warehousing, order picking	 Battery operated truck	 Shelf trolley	 Conveyor with turntable
	Powered trucks and trolleys, vehicles, etc.	Non-powered trucks, trolleys and aids	Tracks, conveyors, slides/chutes/roller balls
Goods dispatch/delivery to site/domestic premises	 HGV mounted fork lift truck	 Star wheeled truck	 Van loading boom
Setting and maintenance tasks	 Hoist on vehicle	 Wheeled tool box	 Sliding dies (low friction surface)
Portering, cleaning and waste	 Powered tug	 Cylinder trolley	 Mobile belt conveyor
Handling clients*	 Stair lift	 Stair climbing wheel chair	 Slide sheet

*Handling assistive equipment that takes into account clients' conditions, rights to autonomy, privacy and dignity should be selected with care.

Solutions Using MHAE

The chart below provides several solutions to assist in avoiding, handling or reducing the unit weight.

Adjustable height devices, rotary and tilt tables	 Rotary table	 Reel trolley	 Auto-leveller	 Sheet/trolley table	Adjustable  height turntable
Mechanical hoists and vacuum lifting devices	 Vacuum hoist	 Reel lifting head	 Tub hoist	 Vacuum hoist	Conveyor and vacuum hoist 
Other	 TV trolley with suction cups	 Battery powered tug	 Bin tilter	 Lifting hook	Gravity feed racking 

Adjustable height devices, rotary and tilt tables	 Mobile conveyor	 Platform truck	 Spring-loaded laundry trolley	 Adjustable height bed
Mechanical hoists and vacuum lifting devices	 Tail lift	 Valve lifting jig	 Shelf trolley	 Stand-aid hoist
Other	 Roll cage	 Hand protection	 Mop bucket on wheels	 Hand rails

Ergonomics—Job Analysis

1. Does the job require awkward postures? ☐ yes ☐ no
2. Does the job require forceful exertions (including lifting, pushing and pulling)? ☐ yes ☐ no
3. How much weight must be lifted? _____
4. How much weight must be pushed? _____
5. How much weight must be pulled? _____
6. Are items bulky? ☐ yes ☐ no
7. Does the lifting/pushing/pulling require an awkward position? ☐ yes ☐ no
8. Is there inadequate time for rest or recovery? ☐ yes ☐ no
9. Must the lifting/pushing/pulling be done quickly? ☐ yes ☐ no
10. Is the item slippery (requiring increased grip force)? ☐ yes ☐ no
11. Is any vibration present (e.g., localized vibration from power hand tools leads to use of an increased grip force)? ☐ yes ☐ no
12. How long is the exposure to vibration? _____ per event _____ per day
13. Are the index finger and thumb used to forcefully grip an object (i.e., a pinch grip compared with gripping the object with your whole hand)? ☐ yes ☐ no
14. Is a small or narrow tool handle used? ☐ yes ☐ no
15. Are there frequent repetitive motions (e.g., every few seconds)? ☐ yes ☐ no
16. Are there prolonged periods when repetitive motions are performed (such as an 8-hour shift)?
☐ yes ☐ no
17. Do the repetitive motions occur in awkward postures? ☐ yes ☐ no
18. Do the repetitive motions require forceful exertions? ☐ yes ☐ no
19. Is there repeated or continuous contact with hard or sharp objects such as non-rounded desk edges or unpadded, narrow tool handles? ☐ yes ☐ no
20. Is there exposure to cold temperatures? ☐ yes ☐ no
21. How frequent are rest breaks? _____
22. How long are rest breaks? _____

Ergonomics—Workstation Checklist

	Yes	No
1. Does the workspace allow for full range of movement?	<input type="checkbox"/>	<input type="checkbox"/>
2. Are mechanical aids and equipment available?	<input type="checkbox"/>	<input type="checkbox"/>
3. Is the height of the work surface adjustable?	<input type="checkbox"/>	<input type="checkbox"/>
4. Can the work surface be tilted or angled?	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the workstation designed to reduce or eliminate:		
a. Bending or twisting at the wrist?	<input type="checkbox"/>	<input type="checkbox"/>
b. Reaching above the shoulder?	<input type="checkbox"/>	<input type="checkbox"/>
c. Static muscle loading?	<input type="checkbox"/>	<input type="checkbox"/>
d. Full extension of the arms?	<input type="checkbox"/>	<input type="checkbox"/>
e. Raised elbows?	<input type="checkbox"/>	<input type="checkbox"/>
6. Are the employees able to vary posture?	<input type="checkbox"/>	<input type="checkbox"/>
7. Are the hands and arms free from sharp edges on work surfaces?	<input type="checkbox"/>	<input type="checkbox"/>
8. Is an armrest provided where needed?	<input type="checkbox"/>	<input type="checkbox"/>
9. Is a footrest provided where needed?	<input type="checkbox"/>	<input type="checkbox"/>
10. Is the floor surface flat and free of obstacles?	<input type="checkbox"/>	<input type="checkbox"/>
11. Are cushioned floor mats provided for employees required to stand for long periods?	<input type="checkbox"/>	<input type="checkbox"/>
12. Are chairs or stools easily adjustable and suited to the task?	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all task elements visible from comfortable positions?	<input type="checkbox"/>	<input type="checkbox"/>
14. Is there a preventive maintenance program for mechanical aids, tools and other equipment?	<input type="checkbox"/>	<input type="checkbox"/>

“No” responses indicate potential problem areas that should receive further investigation.

Ergonomics—Task Analysis Checklist

	Yes	No
1. Does the design of the primary task reduce or eliminate:		
a. Bending or twisting of the back or trunk?	<input type="checkbox"/>	<input type="checkbox"/>
b. Crouching?	<input type="checkbox"/>	<input type="checkbox"/>
c. Bending or twisting the wrist?	<input type="checkbox"/>	<input type="checkbox"/>
d. Extending the arms?	<input type="checkbox"/>	<input type="checkbox"/>
e. Raised elbows?	<input type="checkbox"/>	<input type="checkbox"/>
f. Static muscle loading?	<input type="checkbox"/>	<input type="checkbox"/>
g. Clothes wringing motions?	<input type="checkbox"/>	<input type="checkbox"/>
h. Finger pinch grip?	<input type="checkbox"/>	<input type="checkbox"/>
2. Are mechanical devices used when necessary?	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the task be done with either hand?	<input type="checkbox"/>	<input type="checkbox"/>
4. Can the task be done with two hands?	<input type="checkbox"/>	<input type="checkbox"/>
5. Are pushing or pulling forces kept minimal?	<input type="checkbox"/>	<input type="checkbox"/>
6. Are required forces judged acceptable by the employees?	<input type="checkbox"/>	<input type="checkbox"/>
7. Are the materials:		
a. Able to be held without slipping?	<input type="checkbox"/>	<input type="checkbox"/>
b. Easy to grasp?	<input type="checkbox"/>	<input type="checkbox"/>
c. Free from sharp edges and corners?	<input type="checkbox"/>	<input type="checkbox"/>
8. Do containers have good handholds?	<input type="checkbox"/>	<input type="checkbox"/>
9. Are jigs, fixtures and vises used where needed?	<input type="checkbox"/>	<input type="checkbox"/>
10. As needed, do gloves fit properly and are they made of the proper fabric?	<input type="checkbox"/>	<input type="checkbox"/>
11. Does the employee avoid contact with sharp edges when performing the task?	<input type="checkbox"/>	<input type="checkbox"/>
12. When needed, are push buttons designed properly?	<input type="checkbox"/>	<input type="checkbox"/>
13. Do the job tasks allow for ready use of personal protective equipment that may be required?	<input type="checkbox"/>	<input type="checkbox"/>
14. Are high rates of repetitive motion avoided by:		
a. Job rotation?	<input type="checkbox"/>	<input type="checkbox"/>
b. Self-pacing?	<input type="checkbox"/>	<input type="checkbox"/>

- c. Sufficient pauses? ☐ ☐
- d. Adjusting the job skill level of the employee? ☐ ☐

15. Is the employee trained in:

- a. Proper work practices? ☐ ☐
- b. When and how to make adjustments? ☐ ☐
- c. Recognizing signs and symptoms of potential problems? ☐ ☐

"No" responses indicate potential problem areas that should receive further investigation.

Ergonomics—Hand Tool Analysis Checklist

	Yes	No
1. Are tools selected to limit or minimize:		
a. Exposure to excessive vibration?	<input type="checkbox"/>	<input type="checkbox"/>
b. Use of excessive force?	<input type="checkbox"/>	<input type="checkbox"/>
c. Bending or twisting the wrist?	<input type="checkbox"/>	<input type="checkbox"/>
d. Finger pinch grip?	<input type="checkbox"/>	<input type="checkbox"/>
e. Problems associated with trigger finger?	<input type="checkbox"/>	<input type="checkbox"/>
2. Are tools powered where necessary and feasible?	<input type="checkbox"/>	<input type="checkbox"/>
3. Are tools evenly balanced?	<input type="checkbox"/>	<input type="checkbox"/>
4. Are heavy tools suspended or counterbalanced in ways to facilitate use?	<input type="checkbox"/>	<input type="checkbox"/>
5. Does the tool allow adequate visibility of the work?	<input type="checkbox"/>	<input type="checkbox"/>
6. Does the tool grip/handle prevent slipping during use?	<input type="checkbox"/>	<input type="checkbox"/>
7. Are tools equipped with handles of textured, nonconductive material?	<input type="checkbox"/>	<input type="checkbox"/>
8. Are different handle sizes available to fit a wide range of hand sizes?	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the tool handle designed not to dig into the palm of the hand?	<input type="checkbox"/>	<input type="checkbox"/>
10. Can the tool be used safely with gloves?	<input type="checkbox"/>	<input type="checkbox"/>
11. Can either hand use the tool?	<input type="checkbox"/>	<input type="checkbox"/>
12. Is there a preventive maintenance program to keep tools operating as designed?	<input type="checkbox"/>	<input type="checkbox"/>
13. Have employees been trained:		
a. In the proper use of tools?	<input type="checkbox"/>	<input type="checkbox"/>
b. When and how to report problems with tools?	<input type="checkbox"/>	<input type="checkbox"/>
c. In proper tool maintenance?	<input type="checkbox"/>	<input type="checkbox"/>

"No" responses indicate potential problem areas that should receive further investigation.

Ergonomics—Materials Handling Checklist

	Yes	No
1. Are the weights of loads to be lifted judged acceptable by the workforce?	<input type="checkbox"/>	<input type="checkbox"/>
2. Are materials moved over minimum distances?	<input type="checkbox"/>	<input type="checkbox"/>
3. Is the distance between the object load and the body minimized?	<input type="checkbox"/>	<input type="checkbox"/>
4. Are walking surfaces:		
a. Level?	<input type="checkbox"/>	<input type="checkbox"/>
b. Wide enough?	<input type="checkbox"/>	<input type="checkbox"/>
c. Clean and dry?	<input type="checkbox"/>	<input type="checkbox"/>
5. Are objects:		
a. Easy to grasp?	<input type="checkbox"/>	<input type="checkbox"/>
b. Stable?	<input type="checkbox"/>	<input type="checkbox"/>
c. Able to be held without slipping?	<input type="checkbox"/>	<input type="checkbox"/>
6. Are there handholds on these objects?	<input type="checkbox"/>	<input type="checkbox"/>
7. When required, do gloves fit properly?	<input type="checkbox"/>	<input type="checkbox"/>
8. Is the proper footwear worn?	<input type="checkbox"/>	<input type="checkbox"/>
9. Is there enough room to maneuver?	<input type="checkbox"/>	<input type="checkbox"/>
10. Are mechanical aids used whenever possible?	<input type="checkbox"/>	<input type="checkbox"/>
11. Are working surfaces adjustable to best handling heights?	<input type="checkbox"/>	<input type="checkbox"/>
12. Does material handling avoid:		
a. Movements below knuckle height and above shoulder height?	<input type="checkbox"/>	<input type="checkbox"/>
b. Static muscle loading?	<input type="checkbox"/>	<input type="checkbox"/>
c. Sudden movements during handling?	<input type="checkbox"/>	<input type="checkbox"/>
d. Twisting at the waist?	<input type="checkbox"/>	<input type="checkbox"/>
e. Extended reaching?	<input type="checkbox"/>	<input type="checkbox"/>
13. Is help available for heavy or awkward lifts?	<input type="checkbox"/>	<input type="checkbox"/>
14. Are high rates of repetition avoided by:		
a. Job rotation?	<input type="checkbox"/>	<input type="checkbox"/>
b. Self-pacing?	<input type="checkbox"/>	<input type="checkbox"/>
c. Sufficient pauses?	<input type="checkbox"/>	<input type="checkbox"/>

15. Are pushing or pulling forces reduced or eliminated? ☐ ☐
16. Does the employee have an unobstructed view of handling the task? ☐ ☐
17. Is there a preventive maintenance program for equipment? ☐ ☐
18. Are employees trained in correct handling/lifting procedures? ☐ ☐

"No" responses indicate potential problem areas that should receive further investigation.

Ergonomics—Office Equipment Purchasing Guide Checklist

Monitors

- Make sure the screen is large enough for adequate visibility. Usually a 15 to 20-inch monitor is sufficient.
- Flat panel displays may be more suitable for locations with limited space.
- The angle and tilt should be easily adjustable.

Keyboards and Trays

- Split keyboard designs will allow you to maintain neutral wrist postures.
- The cords should be long enough to allow the user to place the keyboard in a variety of positions.
- Consider a keyboard without a 10-key keypad if it is not required. Keyboards without keypads allow the user to place the mouse closer to the keyboard.
- Consider the shape and size of the keyboard if a keyboard tray is used. The keyboard should fit comfortably on the tray.
- Consider keyboards without built-in wrist rest.
- Small laptop keyboards are not suitable for prolonged typing tasks.
- Keyboard trays should be wide enough and deep enough to accommodate the keyboard and any peripheral devices, such as a mouse.
- Keyboard trays should have adjustment mechanisms that lock into position without turning knobs.

Desks and Work Surfaces

- The desk should have a work surface large enough to accommodate a monitor and a keyboard.
- You should have sufficient space to place the items you use most often, such as keyboard, mouse, and monitor directly in front of you.
- There should be sufficient space underneath for your legs while sitting in a variety of positions.
- Purchase an adjustable-height desk to provide correct height adjustment to fit a variety of users.
- Desktops should have a matte finish to minimize glare.
- A rounded or sloping surface desk is preferable to reduce stress from sharp edges.
-

Chairs

- The chair should be easily adjustable.
- The chair should have a five-legged base with chair casters that roll easily over the floor or carpet.
- The chair should swivel 360 degrees so it is easier to access items around your workstation without twisting.
- The minimum seat height should be about 16 inches.
- If the user weighs more than 275 pounds, the chair must be designed to support the extra weight.
- Seat pan requirements are:
 - The length should be 15 inches to 17 inches.
 - The width should be at least as wide as the user's thighs. A minimum width of about 18 inches is recommended.
 - Chair edges should be padded and contoured for support.

- The seat pan tilt should have a minimum adjustable range of about 5 degrees forward and backward.
 - The front edge of the seat pan should be rounded.
- The backrest should be at least 15 inches high and 12 inches wide.
 - The backrest should conform to your body and minimize interference with your arms.
 - The backrest should allow you to recline at least 15 degrees and should lock into place for firm support.
- Armrests should be removable and adjustable.
 - Armrest height should be adjustable between 7 inches and 10.5 inches from the seat pan.
 - Armrests should be large enough (in length and width) to support your forearm without interfering with the work surface.
 - Armrests should be padded and soft.

Document Holders

- The document holder should be stable and adjustable.
- If the task requires frequent access to the document (such as writing on the document), a holder that sits between the keyboard and monitor may be more appropriate.

Wrist Rests

- The wrist rest should match the front edge of the keyboard in width, height, slope, and contour.
- Pad should be soft but firm. Gel type materials are recommended.
- Wrist rest should be at least 1.5 inches deep (depth away from the keyboard) to minimize contact pressure on the wrists and forearm.

Mouse/Pointing Devices

- Choose a mouse/pointer based on the requirements of your task and your physical limitations.
- A mouse should match the contour of your hand and have sufficient cord length to allow its placement next to the keyboard.
- A smaller mouse may be more appropriate, especially if you have small hands.

Telephones

- The telephone should have a speaker feature for "hands-free" usage.
- "Hands-free" headsets should have volume adjustments and volume limits.

Desk Lighting

- Use bright lights with a large lighted area when working with printed materials. Limit and focus light for computer tasks.
- The location and angle of the light sources, as well as their intensity levels, should be fully adjustable.
- The base should be large enough to allow a range of positions or extensions.

Exercises and Stretches

Eye Comfort Exercises

1. Blinking produces tears to help moisten and lubricate the eyes.
2. Yawning produces tears to help moisten and lubricate the eyes.
3. Expose the eyes to natural light.

Palming

1. While seated, brace elbows on the desk and close to the desk edge.
2. Let weight fall forward.
3. Cup hands over eyes.
4. Close eyes.
5. Inhale slowly through nose and hold for four seconds.
6. Continue deep breathing for 15 to 30 seconds.

Eye Movements

1. Close eyes.
2. Slowly and gently move eyes up to the ceiling, then slowly down to the floor.
3. Repeat three times.
4. Close eyes.
5. Slowly and gently move eyes to the left, then slowly to the right.
6. Repeat three times.

Focus Change

1. Hold one finger a few inches away from the eye.
2. Focus on the finger.
3. Slowly move the finger away.
4. Focus far into the distance and then back to the finger.
5. Slowly bring the finger back to within a few inches of the eye.
6. Focus on something more than eight feet away.
7. Repeat three times.

Source: National Institutes of Health

Musculoskeletal System Exercises and Stretches

Deep Breathing

1. While standing, or in an otherwise relaxed position, place one hand on the abdomen and one hand on the chest.
2. Inhale slowly through the nose.
3. Hold for four seconds.
4. Exhale slowly through the mouth.
5. Repeat.

Cable Stretch

1. Sit down with chin in, stomach in, shoulders relaxed, hands relaxed in lap and feet flat on the floor.
2. Imagine a cable pulling the head upward.
3. Hold for three seconds and relax.
4. Repeat three times.

Sidebend: Neck Stretch

1. Tilt head to one side (ear towards shoulder).
2. Hold for 15 seconds.
3. Relax.
4. Repeat three times on each side.

Diagonal Neck Stretch

1. Turn head slightly and then look down, as if looking in your pocket.
2. Hold for 15 seconds.
3. Relax.
4. Repeat three times on each side.

Shoulder Shrug

1. Slowly bring shoulders up to the ears and hold for approximately three seconds.
2. Rotate shoulders back and down.
3. Repeat ten times.

Executive Stretch

1. While sitting, lock hands behind head.
2. Bring elbows back as far as possible.
3. Inhale deeply while leaning back and stretching.
4. Hold for 20 seconds.
5. Exhale and relax.
6. Repeat one time.

Foot Rotation

1. While sitting, slowly rotate each foot from the ankle.
2. Rotate three times in one direction, then three times in the opposite direction.
3. Relax.

4. Repeat one time.

Hand Shake

1. While sitting, drop arms to the side.
2. Shake hands downward gently.
3. Repeat frequently.

Hand Massage (Note: Perform very gently!)

1. Massage the inside and outside of the hand using the thumb and fingers.
2. Repeat frequently, including before beginning work.

Finger Massage (Note: Perform very gently!)

1. Massage fingers of each hand individually, slowly and gently.
2. Move toward nail gently.
3. Massage space between fingers.
4. Perform daily.

Wrist Stretch

1. Hold arm straight out in front of you.
2. Pull the hand backwards with the other hand, then pull downward.
3. Hold for 20 seconds.
4. Relax.
5. Repeat three times.

Warming Up for Work

Just as an athlete prepares before playing a sport, you too should prepare before work to help prevent back injuries. The slow stretches in the examples below help prevent back injuries and make your muscles more flexible. Hold each position for 20 seconds and repeat three times before work.



Sources: National Institute of Occupational Safety and Health

Lifting with Proper Posture

Lifting is strenuous. It requires proper training and technique. By lifting with your large, strong leg muscles instead of the small muscles of your back, you can prevent back injuries and reduce low back pain. There are five steps to follow when lifting an object:

1. *Get close to the load.* Get as close to the load as possible, as if you're hugging the object. Having the object close to your body puts less force on your lower back.
2. *Maintain your curves.* Keep yourself in an upright position while squatting to pick up.
3. *Tighten your stomach muscles.* Tightening your stomach muscles helps support the spine. Don't hold your breath while tightening the muscles.
4. *Lift with your legs.* Your legs are the strongest muscles in your body, so use them.
5. *Pivot, don't twist.* Turn with your feet, not your back. Your back isn't built for twisting from side to side.

If a load is too heavy to lift alone, ask for help. Pick one person to coach the lift. This way you lift and lower at the same time.

If a load is above our shoulders, use a step stool to elevate yourself until the load is at least chest level, preferably waist height. Pull the object close to your body and then lift. Remember to maintain your curves. Use your arms and legs to do the work.

Sources: National Institute of Occupational Safety and Health

Computer Workstation Setup

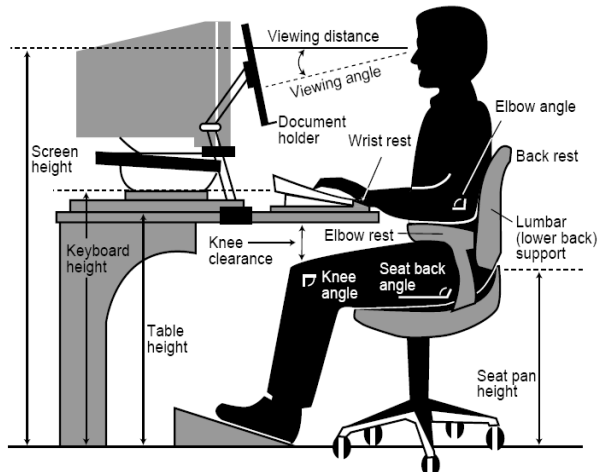
Employee:

Department:

Location:

Supervisor:

Assessment Date:



Monitor

Yes	No	N/A	Adjusted	
				Directly in front of user?
				Top of the screen at eye level?
				Monitor is clean of debris?
				Distance is 16"-24" from worker?
				Monitor free of glare?
				Are the settings correct for color, refresh and size?

Comments:

Keyboard/Mouse

Yes	No	N/A	Adjusted	
				Wrists are straight on keyboard, no flexing?
				Forearms are parallel to the floor (90 degree angle)?
				Keyboard tray/platform is stable?
				Mouse is located next to keyboard?

Comments:

Chair

Yes	No	N/A	Adjusted	
				Thighs parallel to the floor?
				Feet flat on the floor? She has a footrest
				The seat is rounded and the correct size?
				The seat lumbar support adjusted to fit the lower back?
				The seat pan adjusted to depth (15-17")/width (min. 18.2") ?
				Armrests adjusted to support arms?-removed from chair?

Comments:

Computer Work Station Setup, page 2

Phone

Yes	No	N/A	Adjusted	
				Location does not require reaching movement?
				Headset provided for heavy usage?
				Phone cord does not create trip or tangle exposure?

Comments:

Lighting

Yes	No	N/A	Adjusted	
				Is lighting sufficient for reading (50-100 ft candles)?
				Is lighting sufficient for VDT (20-40 ft candles) ?
				Is there a glare issue with monitor or other functions?

Comments:

Work Area

Yes	No	N/A	Adjusted	
				Are most used equipment and material within primary work zone?
				Leg area under the desk is clear of striking hazards?
				Work area is free of tripping hazards such as wires, purse and cords?
				Temperature is comfortable?
				No source of noise or vibration?
				Document holder at eye level for data entry?

Comments:

Recommendations for new equipment

	Footrest		Headphone Set
	Keyboard tray		Glare Screen
	Adjust desk height by_____		New Chair
	Wrist rest		Mouse with trackball
	Mouse rest		Split Keyboard
	Task light		Document Holder

Comments:

Mounting and Dismounting Equipment and Vehicles


Getting in and out of larger equipment is the source occupational accidents. The higher seating areas require the employee to climb up into the cab. Employees often fall injuring their backs, legs or ankles. Employees should receive training on and supervisors are to enforce the following safety rules:

- Park in an area of low traffic to avoid, dismounting into traffic.
- Set equipment parking brake.
- Maintain a three-point contact when mounting and dismounting by keeping two feet and one hand or two hands and one foot on the machine/ladder/basket at all times.
- Face the equipment when mounting or dismounting.
- Do not jump down to the ground.
- Do not swing out and off of the equipment.
- Go slow to prevent slipping.
- Make sure shoes are clean of mud or other slippery substances.
- Perform regular preventive maintenance inspections on equipment mechanical features, ladders, rungs, handles/handholds and attachment points for personal fall arrest systems.
- Seatbelts should always be used, along with any other required equipment.

Three-Point Contact



Fleet Program for More Than 10 Private Cars

The purpose of this policy is to ensure safety and provide guidance to  **PUTZHEIM CRESCENT INCORPORATED** employees who drive company vehicles.

Responsibilities

Owner/CEO

Responsible for ensuring the policies and procedures are enforced by the Fleet Administrator, provide resources to ensure the vehicles are properly maintained and employees are trained in defensive driving techniques.

Fleet Administrator

Responsible for general administration of this policy.

Fleet Safety Committee

Responsible for reviewing accident reports and determining if the driver is at fault for the accident.

Driver

Must operate the vehicle in a safe manner and drive defensively to prevent injuries and property damage.

Driver Selection

Drivers will be selected and evaluated upon their ability to operate the company vehicle. The company will:

- Review previous driving experience through reference checks.
- Review drivers' Motor Vehicle Record initially and annually thereafter, or more frequent if warranted. Three years of driving history will be reviewed.
- Ensure driver has a valid drivers license.
- Ensure driver is qualified to operate the vehicle(s) they will operate.

Motor Vehicle Record Review

A motor vehicle report will be obtained prior to driving a company vehicle and annually. A driving record that fails to meet the criteria listed below violates the intent of this policy and will result in a loss of the privilege of driving a company-provided vehicle.

Criteria that may indicate an unacceptable driving record include, but are not limited to:

- Two or more moving violations within one year.
- Two or more chargeable accidents within one year. Chargeable means the driver is determined to be the primary cause of the accident through speeding or inattention. Contributing factors, such as weather or mechanical problems, will be taken into consideration.
- Any combination of accidents and/or moving violations.

Fleet Safety Committee

The fleet safety committee is composed of the (as assigned such as VP of Operations, the Fleet/Facilities Manager and the Director of Human Resources). The committee is responsible for:

- Reviewing accidents and drivers' safety records to determine if corrective action (such as training or equipment changes) should be implemented to ensure the safe operation of vehicles.
- Reviewing driving records of individual employees and making recommendations to management when driving privileges should be suspended or revoked.
- Reviewing all other issues that arise with respect to compliance with this policy.

General Rules and Regulations for Use of Company Vehicles


Assigned company vehicles are provided to eligible employees to enable them to efficiently perform their job functions.

- Seat belts shall be worn by all persons in the vehicle at all times.
- Cellular phones shall not be used while the driver is operating the vehicle. The driver will pull over to a safe parking area for the phone call.
- An employee may use the vehicle for personal transportation on a limited basis as defined in the Personal Use, Passengers and Authorized Drivers of Company Vehicles section.
- An employee is fully responsible for the general maintenance and proper care of the vehicle.
- The vehicle color, factory options and equipment are standard and will not be altered.
- The assigned driver must inform the *Fleet Administrator* immediately of any vehicle maintenance needs or safety problems.
- Proper vehicle maintenance must occur as noted under the vehicle maintenance section.
- The vehicle's interior and exterior must be kept clean.
- No vehicle will be used for transporting any bulk material that protrudes from the trunk/cargo area or interior compartments including company equipment or hazardous materials.
- Employees must have a valid and current driver's license to operate a company vehicle or a personal vehicle with current auto insurance while on company business. For those employees who are assigned a company vehicle, an updated copy of their driver's license must be kept on file in the fleet office at all times. A copy of an employee's current driver's license is required when checking out a pool vehicle or renting a vehicle.
- Copies of the vehicle registration, insurance card and a vehicle accident report packet must be kept in the company vehicle at all times.


The *Fleet Administrator*, will notify drivers of assigned company-provided vehicles 60 days in advance of vehicle inspection expiration date. The employee is responsible for obtaining a state vehicle inspection before it expires.

Company vehicles are subject to inspection at any time.

Periodic defensive driving education and training will be offered. All employees utilizing by

PUTZHEIM CRESCENT INCORPORATED company vehicles or conducting company business while using personal vehicles will be required to attend the training every two years.

Use of Pool Vehicles

- PUTZHEIM CRESCENT INCORPORATED will maintain a limited number of pool vehicles that may be used by employees for corporate business travel.
- If possible, pool vehicles should be used in place of a personal vehicle for business trips.

- Trip tickets must be completed every time a pool vehicle is used. The information will be used to determine pool car utilization and maintenance needs.
- Automobiles should be reserved and are available on a first-come, first-serve basis. In case of conflicting requests, priority will be given to out-of-town trips.
- Pool vehicles must be used for company business. Pool vehicles should not be taken home at night unless authorized.
- Pool vehicles must be returned clean and with a full tank of fuel. When a vehicle reaches close to one-fourth of a tank, it must be refueled immediately.

Vehicle Maintenance

Proper vehicle maintenance, a basic element of any fleet safety program, ensures a safe vehicle and avoids costly repairs and unexpected breakdowns.

- Employees should complete routine inspections or safety checks of critical items, such as brakes, lights, tires and wipers every 15,000 miles or sooner if a problem arises.
- Oil changes are due every 5,000 miles.
- Tires should be rotated every 8,000–10,000 miles.

Maintain tire pressure.

The vehicle must be cleaned (interior and exterior) at least once a month to help maintain its good appearance.

Oil and wiper fluids should be checked twice per month.

Visual inspections should be made daily to body, tires and glass.

Chipped windshields should be repaired immediately.

Vehicle Inspections

A quarterly vehicle inspection will be completed by *the Fleet Administrator* to supplement the preventative maintenance activities and daily “walk-around” inspections.

Passengers and Authorized Drivers of Company Vehicles

Company vehicles must be driven by authorized employees only, or in case of repair testing, by a mechanic. Spouses, other family members or non-employees are *not* authorized to drive company vehicles.

- Passengers are generally limited to those individuals who need to ride in the vehicle to conduct company business, such as other employees, vendor representatives and retailers.
- Children age 12 and under should never ride in a front passenger seat. If an employee’s child, age 12 or under, is transported in a company vehicle, the child must ride buckled up in the rear seat. Use child safety seats, booster seats or safety belts appropriate to the child’s age and size as required by law.

Personal Use of Company Vehicles

Restricted, need-based use to run errands and other limited personal business may be conducted during the workday and on the way to and from work.

- The vehicle may not be used to haul or tow a trailer.
- The vehicle may be used for longer personal trips upon authorization by the driver’s supervisor.

Replacement of Company Vehicles

Company vehicles will be replaced, at the discretion of the Fleet Administrator.

Business Use of Rental Vehicles

When renting a car in lieu of using a company vehicle, all aspects of the corporate vehicle policy will apply.

Personal Automobile Usage for Company Business

- Corporate non-owned auto insurance coverage only covers liability on the corporation for damage to a third party automobile or personal injury while the automobile is being used by the employee for company business. Damage to employee-owned personal autos, as well as injury to family members and friends, will not be covered by the corporate coverage; therefore, it is the sole responsibility of the employee.
- The same rules regarding appearance, cleanliness and safety apply to personal vehicles used for company business.

Driver Safety Rules

The safety of our employees, whether they are driving a company vehicle or their own vehicle, is our utmost priority. All employees should adhere to the following safety rules.

- Each employee must have a valid state driver's license. The company employee is responsible for knowing and complying with all federal, state, county and local driving laws.
- The use of a company vehicle while under the influence of intoxicants and other drugs that could impair driving ability is forbidden. This behavior is sufficient cause for discipline, up to and including termination of employment.
- No driver shall operate a company vehicle when the ability to do so safely has been impaired by illness, fatigue, injury, consumption of alcohol or prescription medication.
- Passengers are limited to the number of seat belts available. Seatbelts must be worn by all occupants of the vehicle.
- No hitchhikers are allowed to ride in company vehicles.
- Employees must perform a thorough "walk-around" inspection of the vehicle before starting or moving the vehicle. If the vehicle is not in a safe operating condition, it is the employee's responsibility to report the condition to the supervisor.
- Employees must ensure all safety items are in place which include safety reflectors (flares), flashlight, tire gauge, jumper cables, fix-a-flat container, accident report form and the required legal documents such as proof of insurance and registration.
- Drivers are responsible for the security of company vehicles assigned to them. The vehicle engine must be shut off, ignition keys removed and vehicle doors locked whenever the vehicle is left unattended.
- Headlights shall be used one hour before sunset and one hour after sunrise, during inclement weather or at anytime when a distance of 500 feet ahead of the vehicle cannot be clearly seen.
- Employees must report any accident in accordance with the "Accident Reporting Procedures" section of this program.

Defensive Driving Guidelines

- Drivers are required to maintain a safe following distance at all times. Drivers should keep a three-second interval between their vehicle and the vehicle immediately ahead. During slippery road conditions, the distance should be doubled or more.

- Drivers must yield the right of way at all traffic signals, emergency vehicles and signs. Drivers should also be prepared to yield for safety's sake at any time. Pedestrians and bicycles in the roadway always have the right of way.
- Drivers must honor posted speed limits. In adverse driving conditions, reduce speed to a safe operating speed that is consistent with the conditions of the road, weather, lighting and volume of traffic. Tires can hydroplane on wet pavement at speeds as low as 40 mph.
- Radar detectors are prohibited in company vehicles.
- Turn signals must be used to show where you are heading while going into traffic and before every turn or lane change.
- When passing or changing lanes, view the entire vehicle in your rear view mirror before pulling back into that lane. When passing or merging into traffic, always look to your left and rear, allowing you to see vehicles that may be in your blind spot.
- Be alert of other vehicles, pedestrians and bicyclists when approaching intersections. Never speed through an intersection on a caution light. When the traffic light turns green, look both ways for oncoming traffic before proceeding.
- When waiting to make left turns, keep your wheels facing straight ahead. If rear-ended, you will not be pushed into the lane of oncoming traffic.
- When stopping behind another vehicle, leave enough space so you can see the rear wheels of the car in front. This allows room to go around the vehicle if necessary and may prevent you from being pushed into the car in front of you if you are rear-ended.
- Avoid backing where possible, but when necessary, keep the distance traveled to a minimum and be particularly careful. Check behind your vehicle before backing. Back to the driver's side. Do not back around a corner or into an area of no visibility.
- Drive courteously to avoid confrontations with other drivers.

Driver Training

All newly hired employees who will be driving company vehicles will be required to complete a Road Test as administered by the supervisor/manager. Driving safety awareness training will be completed annually. Employees who sustain a "preventable accident" as determined by the accident review committee will be subject to required to attend remedial defensive driver training. Drivers of company cars should be required to attend an 8-hour Defensive Driving class at their local facility.

Reporting Requirements

- If an employee's driver's license is revoked or suspended, the employee must notify *the Fleet Administrator* by 9 a.m. CST the next business day, and immediately discontinue operation of the company vehicle. Failure to do so may result in disciplinary action, including termination of employment.
- All accidents in company-provided vehicles, regardless of severity, must be reported to the police and *Fleet Administrator*. Accidents must be reported immediately (from the scene, during the same day, or as soon as possible). Accidents that occur in personal vehicles while on company business must follow these same accident procedures for workers compensation purposes.
- Failing to stop after an accident and/or failure to report an accident may result in disciplinary action, up to and including termination of employment.

- Drivers must report all ticket violations received during the operation of a company vehicle or while driving a personal vehicle on company business within 72 hours to *the Fleet Administrator*.

Accident Reporting Procedures

In an attempt to minimize the results of an accident, the driver must prevent further damages or injuries, obtain all pertinent information and report information accurately.

- Call for medical aid if necessary.
- Call the police. All accidents, regardless of severity, must be reported to the police. If the driver cannot get to a phone, a note should be written giving the location to a reliable-appearing motorist who is asked to notify the police.
- Record names and addresses of driver, witnesses and occupants of the other vehicles and any medical personnel who may arrive at the scene.
- Complete the form in the Vehicle Accident Packet located in the glove compartment of company vehicles. Pertinent information to obtain includes: license number of other drivers; insurance company names and policy numbers of other vehicles; make, model and year of other vehicles; date and time of accident; and overall road and weather conditions.
- Do not discuss the accident with anyone at the scene except the police. Do not accept any responsibility for the accident. Don't argue with anyone.
- Provide the other party with your name, address, driver's license number and insurance information.
- Immediately report the accident and provide a copy of the accident report and/or written description of the accident to the *Fleet Administrator*.
- A formal accident review will be conducted on each accident to determine the cause and how the accident could have been prevented.

Accident Review

The Fleet Safety Committee will conduct a review of all records pertaining to the accident and carefully determine if the driver was at fault, regardless of legal liability. Based on the Fleet Safety Committee's determination of a preventable accident, the employee may be subject to counseling, retraining or disciplinary action up to or including termination.

- signs. Drivers should also be prepared to yield for safety's sake at any time. Pedestrians and bicycles in the roadway always have the right of way.
- Drivers must honor posted speed limits. In adverse driving conditions, reduce speed to a safe operating speed that is consistent with the conditions of the road, weather, lighting and volume of traffic. Tires can hydroplane on wet pavement at speeds as low as 40 mph.
- Radar detectors are prohibited in company vehicles.
- Turn signals must be used to show where you are heading while going into traffic and before every turn or lane change.
- When passing or changing lanes, view the entire vehicle in your rear view mirror before pulling back into that lane. When passing or merging into traffic, always look to your left and rear, allowing you to see vehicles that may be in your blind spot.
- Be alert of other vehicles, pedestrians and bicyclists when approaching intersections. Never speed through an intersection on a caution light. When the traffic light turns green, look both ways for oncoming traffic before proceeding.
- When waiting to make left turns, keep your wheels facing straight ahead. If rear-ended, you will not be pushed into the lane of oncoming traffic.
- When stopping behind another vehicle, leave enough space so you can see the rear wheels of the car in front. This allows room to go around the vehicle if necessary and may prevent you from being pushed into the car in front of you if you are rear-ended.
- Avoid backing where possible, but when necessary, keep the distance traveled to a minimum and be particularly careful. Check behind your vehicle before backing. Back to the driver's side. Do not back around a corner or into an area of no visibility.
- Drive courteously to avoid confrontations with other drivers.

Driver Training

All newly hired employees who will be driving company vehicles will be required to complete a road test as administered by the supervisor. On-going driver safety awareness training will be completed annually. Employees who sustain a "preventable accident" as determined by the accident review committee will be subject to required to attend remedial defensive driver training.

Reporting Requirements

- If an employee's driver's license is revoked or suspended, the employee must immediately notify the Fleet Administrator by 9 a.m. CST the next business day, and immediately discontinue operation of the company vehicle. Failure to do so may result in disciplinary action, including termination of employment.
- All accidents in company vehicles, regardless of severity, must be reported to the police and the Fleet Administrator. Accidents must be reported immediately (from the scene, during the same day or as soon as possible). Accidents that occur in personal vehicles while on company business must follow these same accident procedures for workers compensation purposes.
- Failing to stop after an accident and/or failure to report an accident may result in disciplinary action, up to and including termination of employment.
- Drivers must report all ticket violations received during the operation of a company vehicle or while driving a personal vehicle on company business within 72 hours to the Fleet Administrator.

Accident Reporting Procedures

- In an attempt to minimize the results of an accident, the driver must prevent further damages or injuries, obtain all pertinent information and report information accurately.
- Call for medical aid if necessary.
- Call the police. All accidents, regardless of severity, must be reported to the police. If the driver cannot get to a phone, a note should be written giving the location to a reliable-appearing motorist who is asked to notify the police.
- Record the names and addresses of driver, witnesses and occupants of the other vehicles and any medical personnel who may arrive at the scene.
- Complete the form in the Vehicle Accident Packet located in the glove compartment of company vehicles. Pertinent information to obtain includes: license number of other drivers; insurance company names and policy numbers of other vehicles; make, model and year of other vehicles; date and time of accident; and overall road and weather conditions.
- Do not discuss the accident with anyone at the scene except the police. Do not accept any responsibility for the accident. Don't argue with anyone.
- Provide the other party with your name, address, driver's license number and insurance information.
- Immediately report the accident and provide a copy of the accident report and/or written description of the accident to (blank).
- A formal accident review will be conducted on each accident to determine the cause and how the accident could have been prevented.

Accident Review

The Fleet Safety Committee will conduct a review of all records pertaining to the accident and carefully determine if the driver was at fault, regardless of legal liability. Based on the Fleet Safety Committee's determination of a preventable accident, the employee may be subject to counseling, retraining or disciplinary action up to or including termination.

Scaffolding

This section establishes safety requirements for the construction, operation, maintenance and use of scaffolds. A scaffold is simply an elevated platform that supports employees and materials. There are a number of different types of scaffolds available. OSHA standard for scaffolding is CFR 1926.451.

Scaffold Capacities

Scaffolds must be able to support their own weight and at least four times the maximum intended load applied to them. Scaffold components have to meet the four-to-one safety factor but only for that portion of the maximum intended load applied to them. The maximum intended load for a component depends on the scaffold type and its configuration. Note that scaffolds and components must be able to support four times the maximum intended load, not the rated load. The intended load includes employees, equipment and supplies. The intended load should never exceed the rated load unless the design is approved by an engineer and the manufacturer.

Direct connections

Direct connections and counterweights used to balance adjustable suspension scaffolds must resist at least four times the tipping force of the scaffold. A competent person who directs the rigging of the scaffold must calculate the potential loads. Safety factors for the counterweights, riggings, and direct connections to roofs, floors and suspension ropes of adjustable suspension scaffolds should be based on the rated load and the stall load of the hoist, not the maximum intended load.

Suspension ropes, hardware, and the maximum intended load

Suspension ropes and connecting hardware on non-adjustable suspension scaffolds must be able to support, without failure, at least six times the maximum intended load applied to them.

Stall loads

The stall load of any scaffold hoist cannot exceed three times its rated load. This safety factor ensures that suspension scaffold support systems are not overloaded.

Design by a qualified person

Scaffolds must be designed by a qualified person and must be constructed and loaded in accordance with that design.

Platform Construction

All scaffold platforms, except walkways and platforms used by erectors and dismantlers, must be fully decked or planked between the front uprights and the guardrail supports. The opening between the uprights and the planking can't exceed one inch unless the employer demonstrates that a wider opening is necessary. The maximum opening can't exceed 9 1/2 inches.)

Platform gaps

Platform units must be placed so the spaces between the units do not exceed one inch unless more space is necessary (i.e.-fitting around uprights with side brackets to extend platform width). The maximum opening cannot exceed 9 1/2 inches.

Platform and walkway widths

Platforms and walkways must be at least 18 inches wide. If work areas are too narrow for 18-inch platforms or walkways, employees can use narrower platforms, but they must be protected from fall hazards by guardrails and/or personal fall-arrest systems.

Front edge of platforms

The front edge of a scaffold platform cannot be more than 14 inches from the face of a structure unless guardrails or personal fall-arrest systems are used to protect employees from falling between the structure and the platform. There are two exceptions to this requirement: (1) the front edge distance for outrigger scaffolds must be no more than three inches, and (2) scaffolds used for plastering and lathing work can be no more than 18 inches from the face of a structure.

Platform lengths

A platform 10 feet or less in length must extend at least six inches, but no more than 12 inches, beyond its support unless the excess length is guarded or can support employees and material without tipping. A platform longer than 10 feet can extend no more than 18 inches beyond a support unless the excess length is guarded or can support employees and material without tipping.

Abutted planks

When platform planks are abutted to create a long platform, each abutted end must rest on a separate support. Abutted planks touch end to end on separate support surfaces; they do not rest on one another.

Overlapped planks

Platform planks overlapped to create a long platform must overlap at least 12 inches over supports unless the planks are nailed together or otherwise restrained so they do not move.

Direction changes

Any platform that rests on a bearer at an angle other than a right angle must be laid first. Platforms that rest at right angles over the same bearer must rest on top of the first platform. Make sure that all platform planks are fully bearing to eliminate potential instability.

Paint (opaque) finishes

Wood platforms cannot be covered with opaque finishes, because opaque finishes cover defects in wood. Wood platform edges, however, may be marked for identification. Preservatives or slip-resistant and fire-retardant finishes are acceptable as long as the finish does not cover structural defects or make them hard to spot.

Mixed or modified components

Scaffold components made by different manufacturers cannot be mixed unless they fit together easily and do not change the scaffold's integrity. Components made by different manufacturers cannot be modified to intermix unless a competent person approves.

Components made from different metals

Scaffold components made from different metals cannot be used together unless a competent person approves. If a competent person determines that mixing components made from different metals could reduce their strength, the employer must take corrective action. If a competent person can't make the determination, then different metals must not be used.

Access to Scaffolds

Employees must use ladders or stairways to reach platforms that are more than two feet above or below the access point. Do not use cross braces as a means of access.

Bottom rung or step

The bottom step or rung of hook-on ladders, attachable ladders and stairway-type ladders must be no more than 24 inches above or below the scaffold supporting level.

Rest platforms

Hook-on and attachable ladders on supported scaffolds more than 35 feet high must have rest platforms at 35-foot intervals. Stairway type ladders must have rest platforms every 12 feet. Integral prefabricated scaffold-access frames must have rest platforms every 35 feet.

Erecting and Dismantling

- Means of access must be determined by a competent person. The competent person must determine if safe access is feasible at each stage of the erecting and dismantling process.
- Hook-on or attachable ladders must be installed as soon as possible after scaffold erection begins.
- End frames of tubular welded frame scaffolds that have parallel, level horizontal members may be used for access.
- Cross bracing is not an acceptable means of access.

Protecting Employees from Falling Objects

Employees on scaffolds must wear hardhats and be protected by toeboards, screens, guardrail systems, debris nets, catch platforms or canopies when falling objects are a hazard. Hardhats cannot be the only means of protecting employees from falling objects. Note that employees must wear hardhats only if falling objects are a hazard. If there is no hazard from falling objects, then hardhats are not required.

Persons Working Below

If tools, materials or equipment could fall from a scaffold and strike others, the area below the scaffold must be barricaded or a toeboard must be placed along the edge of the scaffold platform. Paneling or screening must protect persons below when tools, materials or equipment are piled higher than the top edge of the toeboard. Alternatively, guardrail systems, canopies or catch platforms may be installed to retain materials.

Protecting Employees from Falling

Employees on scaffolds more than 10 feet above a lower level must use fall protection. The employer has the option, in many cases, of protecting employees with guardrails or personal fall-arrest systems. On single-point or two-point adjustable suspension scaffolds, however, guardrails and personal fall-arrest systems are required. On other types of scaffolds only personal fall-arrest systems are allowed.

When you work from a scaffold more than 10 feet above a lower level, you must be protected from falling.

General Requirements

- The footing or anchorage for scaffolds shall be sound, rigid and capable of carrying the maximum intended load without settling or displacement. Unstable objects, such as barrels, boxes, loose brick or concrete blocks shall not be used to support scaffolds or planks.
- Scaffolds shall be maintained in a safe condition and shall not be altered or moved horizontally while they are in use or occupied.
- Damaged or weakened scaffolds shall be immediately repaired and shall not be used until repairs have been completed.
- A safe means must be provided to gain access to the working platform level through the use of a ladder, ramp, etc.
- Overhead protection must be provided for personnel on a scaffold exposed to overhead hazards.
- Guardrails, midrails and toeboards must be installed on all open sides and ends of platforms more than 10 feet above the ground or floor. Wire mesh must be installed between the toeboard and the guardrail along the entire opening, where persons are required to work or pass under the scaffolds.
- Employees shall not work on scaffolds during storms or high winds or when covered with ice or snow.
- As noted earlier, there are a number of scaffold types, and OSHA CFR 1910.28 should be reviewed carefully for special requirements that apply to each type.

Manually Propelled Mobile Ladder Stands and Scaffolds

This section contains requirements for the design, construction, and use of mobile work platforms (including ladder stands but not including aerial ladders) and rolling (mobile) scaffolds (towers). As in the previous section, there is a wide variety of materials and design possibilities involved, and no attempt will be made to discuss detailed design criteria at this time.

General requirements include:

- All exposed surfaces of mobile ladder stands and scaffolds shall be free from sharp edges, burrs or other safety hazards.
- The maximum work height shall not exceed four times the minimum base dimension unless outriggers, guys or braces are added to provide stability.

This standard requires guardrails and toeboards for work levels 10 feet or more above the ground or floor.

**Best Practices
Working from Supported Scaffold**

Activity	Best Practice
Getting to the scaffold platform	<ul style="list-style-type: none"> • Use ladders or stairs to reach platforms that are more than two feet above or below the access point.
Loading scaffold platforms	<ul style="list-style-type: none"> • Scaffolds must be able to support their own weight and at least four times the maximum intended load. The maximum intended load includes employees, equipment, and supplies. • Platforms must not deflect more than 1/60 of the span when they are loaded.
Using scaffold components	<ul style="list-style-type: none"> • Don't use damaged scaffold components. Repair or replace them immediately. • Make sure a competent person inspects the components before each use. • Don't modify components. • Scaffold components made by different manufacturers may be mixed, provided they fit together without force and maintain structural integrity.
Minding the environment	<ul style="list-style-type: none"> • Watch for slippery surfaces. Don't work on platforms covered with snow and ice. • Stay off scaffolds during storms and strong winds unless a competent person determines that it's safe. • Keep a safe distance from power lines and any other conductive source. The minimum clearance distance for uninsulated electrical lines is 10 feet.
Erecting, dismantling and moving scaffolds	<ul style="list-style-type: none"> • Scaffolds must be erected, dismantled or moved only under the supervision of a competent person. The competent person must be on site to direct and supervise the work. • Only trained, experienced persons selected by the competent person may do the work. • Never use wood outriggers to support scaffold. • Don't use bricks, blocks, barrels or other unstable objects to level a scaffold.
Protecting employees from falling objects	<ul style="list-style-type: none"> • If tools, materials or equipment could fall from a scaffold, the area below the scaffold must be barricaded or the scaffold must have toeboards or screens. • Don't throw anything from a scaffold.

Inspecting scaffolds	<ul style="list-style-type: none">• Inspect components, connections, planks and structures regularly.• Keep the scaffold level, plumb and square.
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Aerial Lifts

Aerial lifts include the following types of vehicle-mounted aerial devices used to elevate personnel to job sites above ground: Extensible boom platforms, aerial ladders, articulating boom platforms and vertical towers.

Before Operating An Aerial Lift

- Check operating and emergency controls, safety devices (such as outriggers and guardrails), personal fall protection gear, wheels, tires and other items specified by the manufacturer.
- Look for possible leaks (air, hydraulic fluid and fuel-system) and loose or missing parts.
- Check where the lift will be used. Is it on a level surface that won't shift?
- Check the slope of the ground or floor. Do not work on steep slopes that exceed slope limits listed by the manufacturer.
- Look for hazards such as holes, drop-offs, bumps, debris, overhead power lines and other obstructions.
- Set outriggers, brakes, and wheel chocks, even if you're working on a level slope.
- Manufacturer's manuals should be provided for operations and maintenance mechanics.
- Operators and mechanics should be trained by a qualified person experienced with the aerial lift model.

Using An Aerial Lift

- Close lift platform chains or doors.
- Stand on the floor of the bucket or lift platform.
- Do not climb on or lean over guardrails.
- Do not exceed manufacturer's load-capacity limits, including the weight of such things as bucket liners and tools.
- If working near traffic, set up work-zone warnings like cones and signs.

To Prevent Electrocutions:

- Non-electrical employees must stay at least 10 feet away from overhead power lines.
- Electrical employees must de-energize/insulate power lines or use proper personal protective equipment and tools.
- Insulated buckets protect from electrocution due to electric current passing through you and the boom to ground. The buckets do not protect if there's another path to ground such as if you touch another wire.

To Prevent Falls:

To help keep employees inside guardrails or in buckets, a full-body harness or a positioning device on bucket trucks or boom-supported lifts will be used. A positioning device (belt) with a short lanyard can be used, if there is an anchorage inside the bucket.

To Prevent Tipovers

- Check the manufacturer's instructions.
- Do not drive with the lift platform elevated unless the manufacturer says that is acceptable.
- Do not exceed vertical or horizontal reach limits or the specified load-capacity of the lift.
- On an elevated scissor lift, avoid too much pushing or pulling.

Training

OSHA says a qualified person must train all users. The training must include:

- Any electrical, fall and falling-object hazards.
- Procedures for dealing with hazards.
- How to operate the lift correctly including maximum intended load and load capacity. The user must show he or she knows how to use the lift.
- Manufacturer's requirements.
- If the hazards change, the type of aerial lift changes, or an employee is not operating a lift properly, employees must be retrained.

Maintenance and Inspections

De-energize and lockout/tagout aerial lifts before any maintenance or repairs. Each aerial lift must be inspected as the manufacturer requires, generally every three months or after 150 hours of use, whichever comes first. The owner of a lift must do a detailed annual inspection, as required by the manufacturer.

When Operating a Leased Lift

- Be sure the lift is properly inspected and serviced before rental.
- Obtain the operator and maintenance manuals and maintenance history.
- Operator controls should be easy to reach and properly marked.
- Aerial lift shall not be modified without written permission of the manufacturer.
- Aerial lifts shall be used only under conditions approved by the manufacturer.
- Proper personal fall protection shall be provided and used.

Forklifts

All employees who operate or anticipate operating a forklift during their employment must complete forklift safety training and comply with this program. The following requirements are incorporated into the forklift safety program.

Responsibilities

Supervisors are responsible for ensuring employees attend annual refresher training and that forklifts are repaired when malfunctioning. The authorized forklift trainer will recognize the proper operating location for each forklift based on rating and hazards. This will be included in the operator training programs with special attention to areas of hazardous atmospheres. Forklift operators are required to attend and pass forklift safety training at least every three years, operate and maintain their vehicles in a safe manner according to their training and report all vehicle problems to their supervisor.

Training

Forklift operators will be trained in the proper operating procedures and inspection of equipment. Operators must pass a proficiency test to make them eligible to drive the vehicle. Maintenance employees will be trained in inspection, battery or fuel handling and troubleshooting problems.

Pre-Inspection Use

A pre-use inspection identifies potential hazards that may be encountered from a damaged forklift and should be performed at least daily. If at any time a forklift is found to be in need of repair, defective, or in any way unsafe, remove it from service until it has been restored to safe operating condition.

Battery Handling

- Locate battery charging installations in designated areas that provide flushing and neutralizing of spilled electrolyte, fire protection, protection of charging apparatus, damage by trucks and adequate ventilation for dispersal of battery gassing fumes.
- Battery handling equipment and a carboy tilter or siphon for handling electrolyte should be provided.
- Smoking is prohibited in the designated area.
- When charging batteries, pour acid into water; not water into acid.
- Properly position forklift and apply brake before attempting to change or charge batteries.
- Properly position and secure reinstalled batteries in the forklift.
- Ensure vent caps are functioning and the battery (or compartment) cover(s) are open to dissipate heat.
- Prevent open flames, sparks or electric arcs in battery charging areas.
- Keep tools and other metallic objects away from the top of uncovered batteries.

Maintenance

- Only employees authorized and trained in the proper process of forklift maintenance can do maintenance on company units.

- Do not use open flames to check for electrolyte level in storage batteries or liquid fuel level in tanks.
- Conduct repairs to fuel and ignition systems of forklifts, which involve fire hazards in designated locations.
- Disconnect batteries prior to repairing electrical systems.
- Use only replacement parts equivalent with those in the original design.
- Do not alter the relative positions of various parts from what they were received from the manufacturer. Do not add any parts not supplied by the manufacturer nor delete any parts supplied by the manufacturer (no additional counterweighing of forklifts unless approved by the manufacturer).
- Keep forklift mufflers in proper working condition and free of debris.
- Keep the forklift in clean condition, free of lint, excess oil and grease.
- Never pick up and drive a forklift left for maintenance without checking with maintenance to make sure the service or repair has in fact been completed.

General Forklift Safe Operation

- All authorized and trained operators must carry proof of current authorization/license with them at all times while operating any forklift on company property or on company business.
- Store and handle liquid fuels such as gasoline and diesel in accordance with Flammable and Combustible Liquids Code.
- Turn off engine before filling fuel tanks.
- Do not stand or pass under the elevated portion of any forklift.
- Passengers are prohibited from riding on forklifts.
- Do not place arms or legs between the uprights of the mast or outside the running lines of the truck.
- A forklift is considered unattended when the operator is 25 feet or more away from the vehicle and it remains in his view, or whenever the operator leaves the vehicle and it is not in his view. When a forklift is left unattended: fully lower load-engaging means, neutralize controls, shut off power and set brakes.
- When the forklift operator is dismounted, within 25 feet and in view of the forklift, then fully lower the engaging means, neutralize the controls and set the brakes to prevent movement.
- Maintain a safe distance from the edge of ramps or platforms while on any elevated dock or platform.
- Forklifts are not to be used to open or close freight doors.
- Where general lighting is less than two lumens per square foot, provide auxiliary directional lighting on the truck.
- Fixed jacks may be necessary to support a semi trailer and prevent upending during the loading or unloading when the trailer is not coupled to a tractor.
- Set brakes and block wheels to prevent movement of trucks and trailers while loading or unloading.
- Check the flooring of trucks and trailers for breaks and weakness before loading or unloading.
- Check for sufficient headroom under overhead hazards such as lights, pipes or sprinkler systems.
- Use only approved forklifts in hazardous locations.
- Whenever a truck is equipped with a lifting carriage or forks for lifting personnel, take the following precautions: use safety platform firmly secured to the lifting carriage and/or forks,

provide means whereby personnel on the platform can shut off power to the truck, provide protection from falling objects, and keep fire aisles, access to stairways and fire equipment clear.

Handling and Moving With the Load

- Only pick up stable and safely arranged loads within the rated capacity of the forklift.
- Adjust long or high (including multiple tiered) loads, which may affect capacity.
- Square up on the center of the load and approach it straight with forks in traveling position.
- Stop when the tips of the forks are about a foot away from the load.
- Level the forks and slowly drive forward until the load is resting against the backrest.
- Lift the load high enough to clear whatever is under it. Carefully tilt the mast back to stabilize the load.
- Starts and stops should be gradual.
- Observe all traffic regulations and keep forklift under control at all times.
- Reduce speed and sound horn at cross aisles and other locations where vision is obstructed.
- Pedestrians have the right-of-way. Always be aware of their presence especially in aisles and doorways.
- Do not drive forklift up to anyone standing in front of a bench or other fixed object.
- Keep a clear view of the path of travel. Always look in the direction of travel.
- Always travel with a load tilted slightly back for added stability. Do not lift or lower the load when the forklift is in motion.
- Travel with the load at a height of four to six inches at the tips and two inches at the heels to clear most uneven surfaces and avoid debris.
- Horseplay is not permitted.
- Slow down for wet, slippery or uneven floors.
- Avoid running over loose objects on the roadway surface.
- Properly secure dock boards and bridge plates before driving over them. Drive over slowly and never exceed their rated capacity.
- Drive in reverse rather than looking around the load if you are unable to see over it.
- Travel down inclines in reverse and up inclines going forward. Ascend and descend grades slowly. If the grade is in excess of 10 percent, drive with load upgrade.

Steering

- Never make a turn at normal traveling speed, always slow down to maintain balance.
- Stay wide when turning into an aisle to help clear the sides and square up with the destination.
- Allow enough room for forks to clear the sides before turning, when backing out of an aisle.
- When negotiating turns, turn the steering wheel in a smooth sweeping motion. At very low speeds, turn the steering wheel at a moderate, even rate.

Putting Load Down

- Square up and stop about a foot away.
- Level the forks and then drive the rest of the way in.
- Lower the load.
- Tilt the forks slightly forward to avoid hooking the load.
- Look over both shoulders and back straight out until the forks clear the pallet.

Forklift Inspection

Operator: _____

Date: _____ Shift: _____

Forklift Number: _____

	Yes	No	Repair
Tires in good condition and pressured			
Steering operating correctly			
Foot brake operating			
Parking brake operating and moveable			
Hydraulic system—no leaks			
Controls—operating and labeled			
Chains/limit switches			
Mast, carriage, and attachments—no damaged, loose, missing bolts or wear on chain guides and insides of mast channels			
Forks straight and slide			
Name plate, markings, and load limits visible			
Operating and warning lights working			
Clutch or creeper control working			
Overhead carriage guard present and undamaged			
Battery connections good			
Fuel line free of leaks and damage			
Exhaust system free of sparks or leaks			
Directional signals working			
Back up alarm device working			
Dead man brake working when exiting seat			
Engine coolant level good			
Engine oil level good			
Seat belt/lap bar in good condition			
Shift linkage in good condition			
Other:			
Other:			
Other:			

Trenching and Excavation

This program sets forth the practices required for trenches or excavations that will be entered by employees with a depth of four feet or greater along any portion of its length. All excavations or trenches four feet deep or greater shall be appropriately benched, shored or sloped according to the procedures and requirements set forth in this program. Excavations or trenches 20 feet deep or greater must have a protective system designed by a registered professional engineer.

General Requirements

All excavations shall be made in accordance with the rules, regulations, requirements, and guidelines set forth in 29 CFR 1926.650, .651, and .652; the Occupational Safety and Health Administration's standard on Excavations, except where otherwise noted below.

Site Supervisor

The Construction Site Supervisor has the primary responsibility for the implementation of the Trenching and Excavation program at their jobsite. The supervisor has ultimate responsibility for the safety of the employees and general public affected by the excavation. This includes evaluation of the work to be performed, determination of the means of protection that will be used and adherence to the provisions of this program as appropriate. The supervisor must ensure daily, or more often as required, that site conditions are safe for employees to work in trenches/excavations.

Competent Person

The competent person is a person capable of identifying existing and potential hazards and who has authorization to take prompt corrective measures to eliminate these hazards. The competent person is to be clearly designated and be placed in charge of all trenching and excavations performed at the construction site. Underground utilities must be located and marked before add trenching or excavation begins.

Employees

Employees have the primary responsibility for working in accordance with the provisions of this program. No employee should enter an excavation meeting the scope of this program until authorized by the competent person. Employees are not allowed in the excavation while heavy equipment is digging.

Pre-excavation Digging

The location of sewers, telephone, fuel, electric, water lines, or any other underground installations that may be encountered during excavation work must be determined and marked prior to opening an excavation. The Site Supervisor is responsible to make arrangements as necessary with the appropriate utility agency for the protection, removal, shutdown, or relocation of underground installations. If it is not possible to establish the exact location of these installations, the work may proceed with caution if detection equipment or other safe and acceptable means are used to locate the utility.

Utility Call Numbers:

Telephone	
Cable	
Gas	
Electric	
Water	
Sewer	

Trenching or excavations must not endanger the underground installations or the employees engaged in the work. Utilities left in place should be protected by barricades, shoring, suspension or other means as necessary to protect employees.

Protection of the Public

Trenching or excavations must be isolated from public access by a substantial physical barrier. Barricades, lighting and posting shall be installed as appropriate prior to the start of excavation operations. All temporary excavations of this type shall be backfilled as soon as possible. If left open overnight, sheeting and marking should be considered.

Guardrails, fences or barricades should be installed around excavations adjacent to walkways, roads, streets, paths or other traffic areas. All protection, guarding and signage should meet the requirements of the municipal, State or Federal agency responsible for the roadway. Warning lights or other illumination shall be used as necessary for the safety of the public at night. Wells, holes, pits and similar excavations must be effectively barricaded or covered and posted. Walkways or bridges used by the general public to cross excavations must be equipped with standard guardrails.

Surface Encumbrances

All equipment, materials, supplies, buildings, roadways, trees, utility vaults, boulders, etc. that could present a hazard to employees working in the excavation must be removed or supported as necessary to protect employees.

Soil Classification

The competent person in charge of the trenching or excavation shall be responsible for determining the soil type. Soil categorizes and rock deposits into four types, as follows:

1. **Stable Rock** is natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed. It is usually identified by a rock name such as granite or sandstone. Determining whether a deposit is of this type may be difficult unless it is known whether cracks exist and whether or not the cracks run into or away from the excavation.
2. **Type A Soils** are cohesive soils with an unconfined compressive strength of 1.5 tons per square foot (tsf) (144 kPa) or greater. Examples of Type A soils are clay, silty clay, sandy clay, clay loam and, in some cases, silty clay loam and sandy clay loam. No soil is Type A if it is fissured, is subject to vibration of any type, has previously been disturbed, is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater or has seeping water.
3. **Type B Soils** are cohesive soils with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf (144 kPa). Examples of other Type B soils are angular gravel, silt, silt loam, previously disturbed soils unless otherwise classified as Type C, soils that meet the

unconfined compressive strength or cementation requirements of Type A soils but are fissured or subject to vibration, dry unstable rock and layered systems sloping into the trench at a slope less than 4H:1V (only if the material would be classified as a Type B soil).

4. **Type C Soils** are cohesive soils with an unconfined compressive strength of 0.5 tsf (48 kPa) or less. Other Type C soils include granular soils such as gravel, sand and loamy sand, submerged soil, soil from which water is freely seeping and submerged rock that is not stable. Also included in this classification is material in a sloped, layered system where the layers dip into the excavation or have a slope of four horizontal to one vertical (4H:1V) or greater.

Layered Geological Strata

Where soils are configured in layers, i.e., where a layered geologic structure exists, the soil must be classified on the basis of the soil classification of the weakest soil layer. Each layer may be classified individually if a more stable layer lies below a less stable layer, i.e., where a Type C soil rests on top of stable rock

All previously disturbed soil is automatically considered Type B or C soil. Soil may be considered Type C by default and no additional tests required.

Soil Testing and Evaluation

Many kinds of equipment and methods are used to determine the type of soil prevailing in an area, as described below. *Note to company using this sample program. You should select the methods you want to implement into your program from methods that follow.*

- A. **Pocket Penetrometer**—Penetrometers are direct reading, spring-operated instruments used to determine the unconfined compressive strength of saturated cohesive soils. Once pushed into the soil, an indicator sleeve displays the reading. The instrument is calibrated in either tons per square foot (tsf) or kilograms per square centimeter (kPa). Penetrometers have error rates in the range of ± 20 -40%.
1. **Shearvane (Torvane)**—To determine the unconfined compressive strength of the soil with a shearvane, the blades of the vane are pressed into a level section of undisturbed soil and the torsional knob is slowly turned until soil failure occurs. The direct instrument reading must be multiplied by two to provide results in tons per square foot (tsf) or kilograms per square centimeter (kPa).
2. **Thumb Penetration Test**—The thumb penetration test involves an attempt to press the thumb firmly into the soil in question. If the thumb makes an indentation in the soil only with great difficulty, the soil is probably Type A. If the thumb penetrates no further than the length of the thumbnail, it is probably Type B soil, and if the thumb penetrates the full length of the thumb, it is Type C soil. The thumb test is subjective and is therefore the least accurate of the three methods.
3. **Dry Strength Test**—Dry soil that crumbles freely or with moderate pressure into individual grains is granular. Dry soil that falls into clumps that subsequently break into smaller clumps (and the smaller clumps can be broken only with difficulty) is probably clay in combination with gravel, sand or silt. If the soil breaks into clumps that do not break into smaller clumps

(and the soil can be broken only with difficulty), the soil is considered unfissured unless there is visual indication of fissuring.

- B. **Plasticity or Wet Throat Test**—This test is conducted by molding a moist sample of the soil into a ball and attempting to roll it into a thin thread approximately 1/8 inch (3 mm) in diameter by two inches (50 mm) in length. The soil sample is held by one end. If the sample does not break or tear, the soil is considered cohesive.
- C. **Visual Test**—A visual test is a qualitative evaluation of conditions around the site. In a visual test, the entire excavation site is observed including the soil adjacent to the site and the soil being excavated. If the soil remains in clumps, it is cohesive; if it appears to be coarse-grained sand or gravel, it is considered granular. The evaluator also checks for any signs of vibration. During a visual test, the evaluator should check for crack-line openings along the failure zone that would indicate tension cracks, look for existing utilities that indicate the soil has previously been disturbed and observe the open side of the excavation for indications of layered geologic structuring. The evaluator should also look for signs of bulging, boiling, or sloughing, as well as for signs of surface water seeping from the sides of the excavation or from the water table. If there is standing water in the cut, the evaluator should check for "quick" conditions listed in this document. In addition, the area adjacent to the excavation should be checked for signs of foundations or other intrusions into the failure zone, and the evaluator should check for surcharging and the spoil distance from the edge of the excavation.

Protective Systems

Benching, sloping, shoring, under the base of the footing of a foundation or wall require a support system designed by a registered professional engineer. Sidewalks, pavement, utility vaults or other similar structures shall not be undermined unless a support system or another method of protection is provided to protect employees from their possible collapse. Sloping or benching is often the preferred methods of protection. However, shoring or shielding is used when the location or depth makes sloping to the allowable angle impractical.

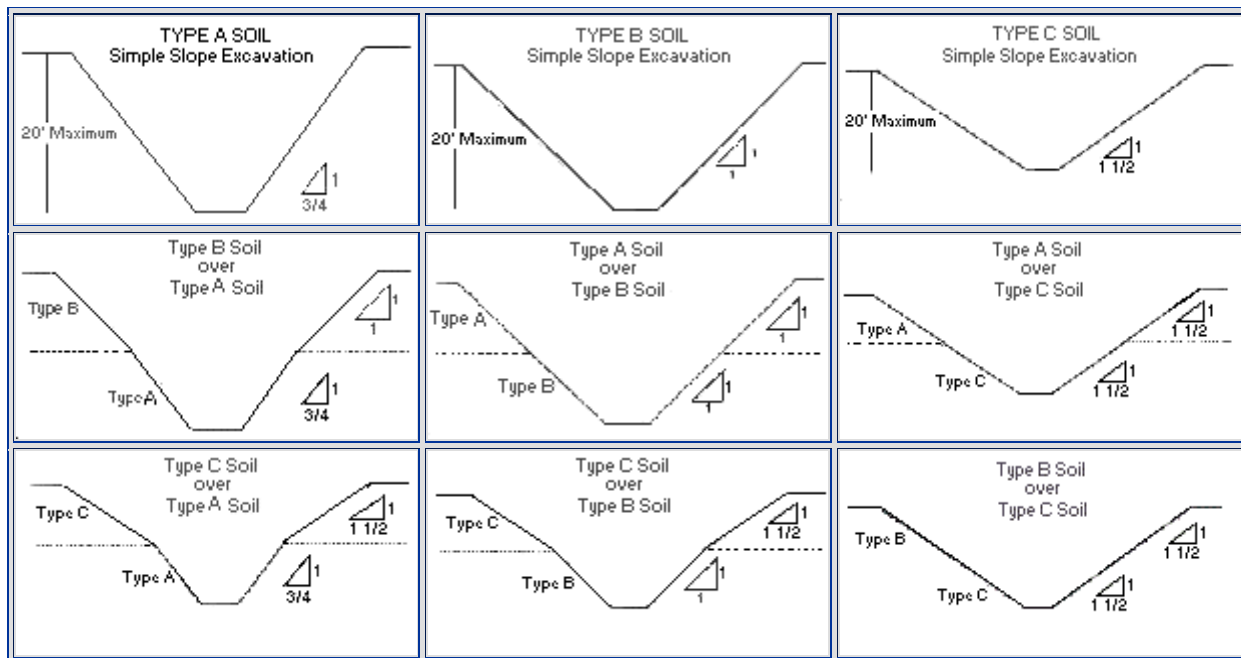
Sloping—Maximum allowable slopes for excavations less than 20 feet (6.09 m) based on soil type and angle to the horizontal are as follows:

Allowable Slopes		
Soil type	Height/Depth ratio	Slope angle
Stable Rock	Vertical	90°
Type A	¾:1	53°
Type B	1:1	45°
Type C	1½:1	34°
Type A (short-term)	½:1	63°

(For a maximum excavation depth of 20 feet)

Maximum allowable slopes for excavations less than 20 feet based on soil type and angle to the horizontal are as follows:
 Type B soil must have walls sloped to a maximum angle of 45-degrees (1:1 slope) from horizontal in all directions.
 Type C soil, must have walls sloped at a maximum angle of 34-degrees (1:1.5 slope) from horizontal in all directions.

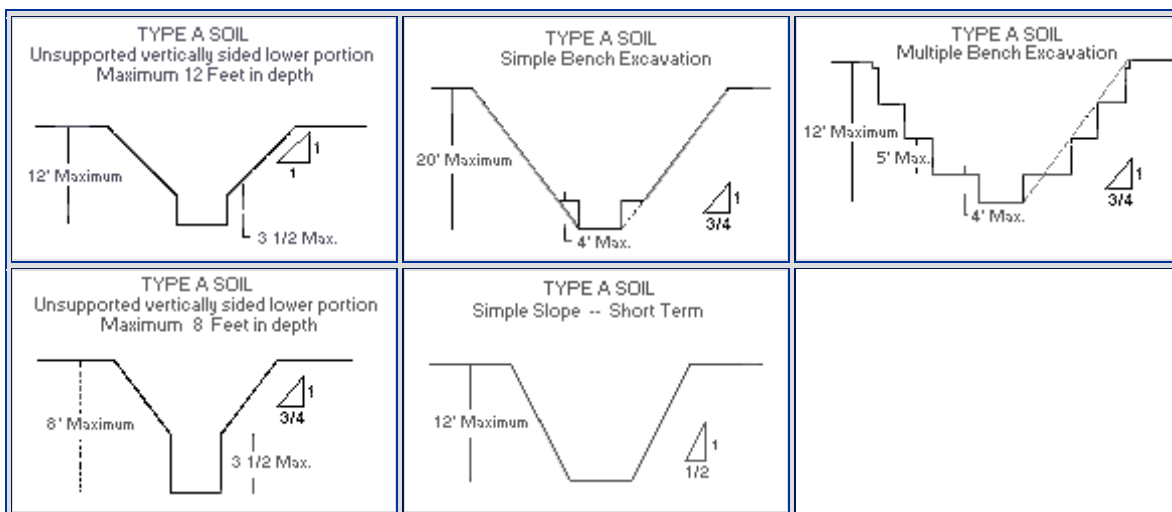
SLOPE CONFIGURATIONS: EXCAVATIONS IN LAYERED SOILS



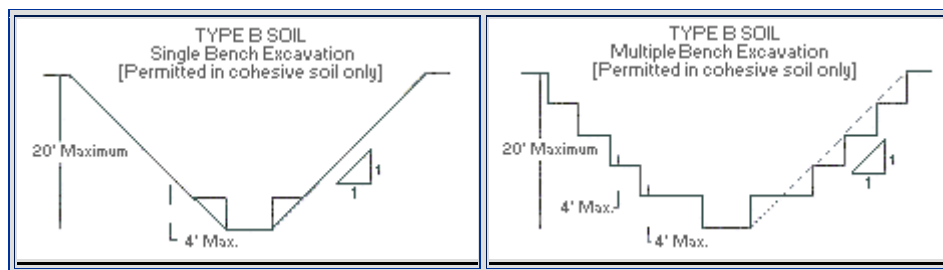
Source: OSHA 29 CFR 1926.650

Benching—There are two basic types of benching: simple and multiple. The type of soil determines the horizontal to vertical ratio of the benched side. As a general rule, the bottom vertical height of the trench must not exceed four feet (1.2 m) for the first bench. Subsequent benches may be up to a maximum of five feet (1.5 m) vertical in Type A soil and four feet (1.2 m) in Type B soil to a total trench depth of 20 feet (6.0 m). All subsequent benches must be below the maximum allowable slope for that soil type. For Type B soil the trench excavation is permitted in cohesive soil only

EXCAVATIONS MADE IN TYPE A SOIL



EXCAVATIONS MADE IN TYPE B SOIL



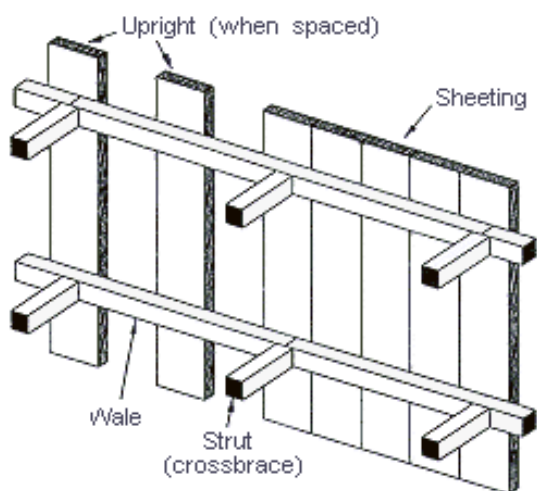
Shoring or Shielding Protection—Shoring is the provision of a support system for trench faces used to prevent movement of soil, underground utilities, roadways and foundations. Shoring or shielding is used when the location or depth of the cut makes sloping back to the maximum allowable slope impractical. Shoring systems consist of posts, wales, struts and sheeting. There are two basic types of shoring: timber and hydraulic.

Shoring Types

Shoring is the provision of a support system for trench faces used to prevent movement of soil, underground utilities, roadways and foundations. Shoring or shielding is used when the location or depth of the cut makes sloping back to the maximum allowable slope impractical. Shoring systems consist of posts, wales, struts and sheeting. There are two basic types of shoring, timber and aluminum hydraulic.

Timber Shoring

The soil type must first be determined. There are six tables of information, two for each soil type. Using the appropriate soil type table, the selection of the size and spacing of the members is then made. The selection of the timber members is based on the depth and width of the trench where the members are to be installed and, in most instances, the selection is also based on the horizontal spacing of the crossbraces. Instances where a choice of horizontal spacing of crossbracing is available, the horizontal spacing of the crossbraces must be chosen by the user before the size of any member can be determined. When the soil type, the width and depth of the trench, and the horizontal spacing of the crossbraces are known, the size and vertical spacing of the crossbraces are known, the size and vertical spacing of the crossbraces, the size and vertical spacing of the wales, and the size and horizontal spacing of the uprights can be read from the appropriate table.



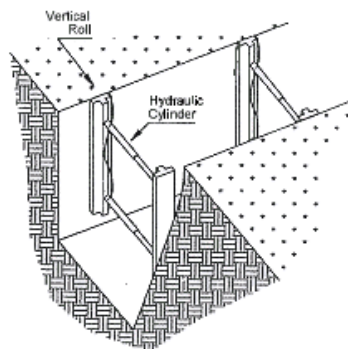
Hydraulic Shoring

Hydraulic shoring is a prefabricated strut and/or wale system manufactured of aluminum or steel. Hydraulic shoring provides a critical safety advantage over timber shoring because employees do not have to enter the trench to install or remove hydraulic shoring. Other advantages of most hydraulic systems are that they:

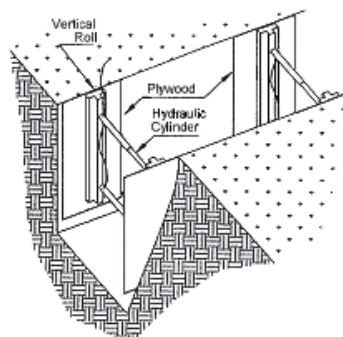
- are light enough to be installed by one employee;
- are gauge-regulated to ensure even distribution of pressure along the trench line;
- can have their trench faces "preloaded" to use the soil's natural cohesion to prevent movement
- can be adapted easily to various trench depths and widths.

All shoring should be installed from the top down and removed from the bottom up. Hydraulic shoring should be checked at least once per shift for leaking hoses and/or cylinders, broken connections, cracked nipples, bent bases and any other damaged or defective parts.

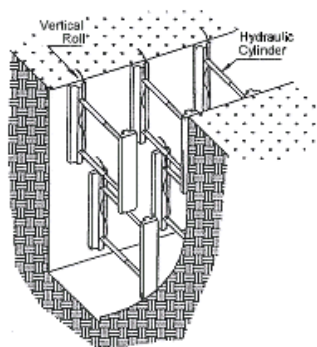
Shoring Variations: Typical Aluminum Hydraulic Shoring Installations



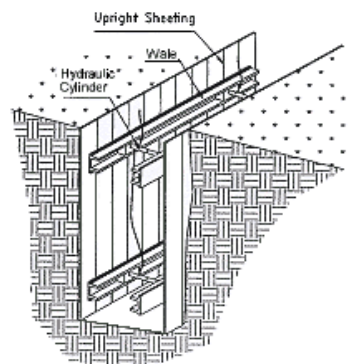
Vertical Aluminum Hydraulic Shoring
(Spot Bracing)



Vertical Aluminum Hydraulic Shoring
(With Plywood)



Vertical Aluminum Hydraulic Shoring
(Stacked)



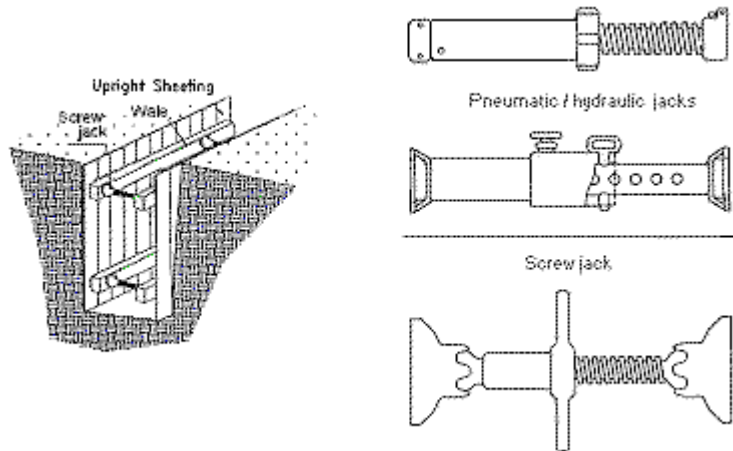
Aluminum Hydraulic Shoring Waler System
(Typical)

Pneumatic Shoring

Pneumatic shoring works in a manner similar to hydraulic shoring. The primary difference is that pneumatic shoring uses air pressure in place of hydraulic pressure. A disadvantage to the use of pneumatic shoring is that an air compressor must be on site.

1. **Screw Jacks**—differ from hydraulic and pneumatic systems in that the struts of a screw jack system must be adjusted manually. This creates a hazard because the worker is required to be in the trench in order to adjust the strut. In addition, uniform "preloading" cannot be achieved with screw jacks, and their weight creates handling difficulties.
2. **Single-Cylinder Hydraulic Shores**—generally used in a water system, as an assist to timber shoring systems, and in shallow trenches where face stability is required.
3. **Underpinning**—involves stabilizing adjacent structures, foundations, and other intrusions that may have an impact on the excavation. As the term indicates, underpinning is a procedure in which the foundation is physically reinforced. Underpinning should be conducted only under the direction and with the approval of a registered professional engineer.

Shoring Variations

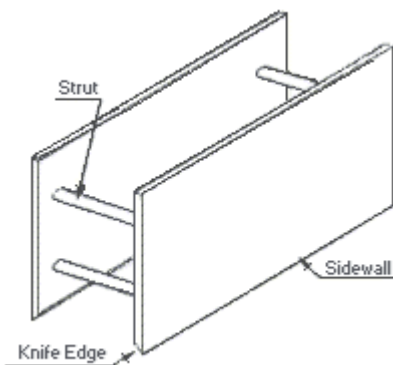


Shielding Types

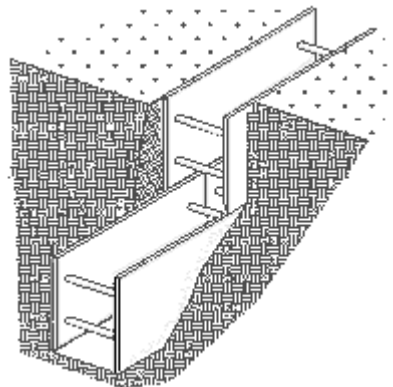
Trench Boxes

Trench boxes are different from shoring because, instead of shoring up or otherwise supporting the trench face, they are intended primarily to protect workers from cave-ins and similar incidents. The excavated area between the outside of the trench box and the face of the trench should be as small as possible. The space between the trench boxes and the excavation side are backfilled to prevent lateral movement of the box. Shields may not be subjected to loads exceeding those the system was designed to withstand.

TRENCH SHIELD



TRENCH SHIELD, STACKED

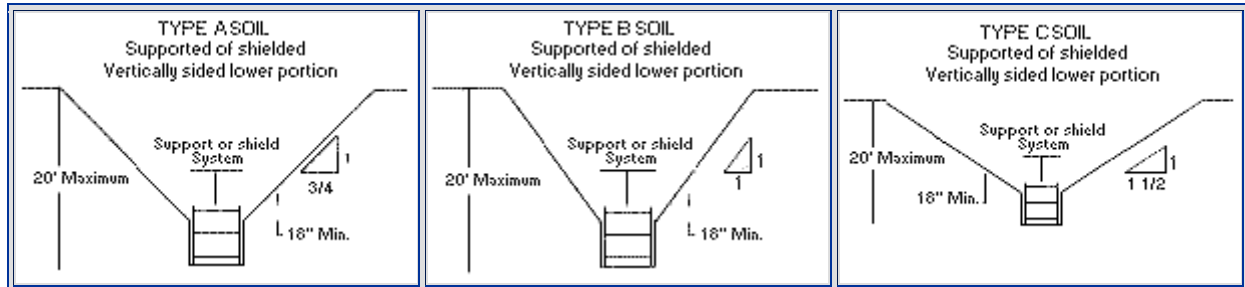


Combined Use

Trench boxes are generally used in open areas, but they also may be used in combination with sloping and benching. The box should extend at least 18 inches (0.45 m) above the surrounding area if there is sloping toward excavation. This can be accomplished by providing a benched area adjacent to the box.

Earth excavation to a depth of two feet (0.61 m) below the shield is permitted, but only if the shield is designed to resist the forces calculated for the full depth of the trench and there are no indications while the trench is open of possible loss of soil from behind or below the bottom of the support system. Conditions of this type require observation on the effects of bulging, heaving and boiling as well as surcharging, vibration, adjacent structures, etc., on excavating below the bottom of a shield. Careful visual inspection of the conditions mentioned above is the primary and most prudent approach to hazard identification and control.

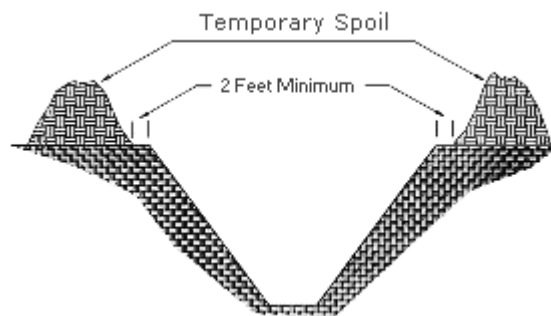
Slope And Shield Configurations



Spoil Protection

Temporary Spoil—must be placed no closer than two feet (0.61 m) from the surface edge of the excavation, measured from the nearest base of the spoil to the cut. This distance should not be measured from the crown of the spoil deposit. Spoil should be placed so that it channels rainwater and other runoff water away from the excavation. Spoil should be placed so that it cannot accidentally run, slide, or fall back into the excavation.

Temporary Spoil



Permanent Spoil—should be placed at some distance from the excavation. Permanent spoil is often created where underpasses are built or utilities are buried. The improper placement of permanent spoil, i.e. insufficient distance from the working excavation, can cause an excavation to be out of compliance with the horizontal-to-vertical ratio requirement for a particular excavation. This can usually be determined through visual observation. Permanent spoil can change undisturbed soil to disturbed soil and dramatically alter slope requirements.

Safety Practices

Surface Crossing of Trenches—Surface crossing of trenches should be discouraged. However, if trenches must be crossed, such crossings are permitted only under the following conditions:

- Vehicle crossings must be designed by and installed under the supervision of a registered professional engineer.
- Walkways or bridges must be provided for foot traffic. These structures shall:
 - have a safety factor of four;
 - have a minimum clear width of 20 inches (0.51 m);
 - be fitted with standard rails;
 - extend a minimum of 24 inches (.61 m) past the surface edge of the trench.

Access and Egress—Access to and exit from the trench require the following:

- Trenches four feet or more in depth should be provided with a fixed means of egress, ramps or ladders.
- Ramps should be solely used by employees for access and exit designed by competent person; secured against displacement; sound, free from trip hazards and slip-resistant.
- Spacing between ladders or ramps must be such that an employee will not have to travel more than 25 feet laterally to the nearest means of egress.
- Ladders will be tied, block or otherwise secured in place. Ladders will extend a minimum of 36 inches (0.9 m) above the landing.
- Metal ladders should be used with caution, particularly when electric utilities are present.

Exposure to Vehicles—*The following procedures should be followed to protect employees on the jobsite from being injured or killed by vehicle traffic:*

- Employees are required to wear warning vests or other suitable garments marked with or made of reflective or highly visible materials.
- Designate a trained flag person along with the use of appropriate signs, signals and barricades in accordance with the Uniform Manual of Traffic Control Devices.

Exposure to Falling Loads—Employees must be protected from loads or objects falling from lifting or digging equipment. Procedures designed to ensure their protection include:

- Employees are not permitted to work under raised loads.
- Employees are required to stand away from equipment that is being loaded or unloaded.
- Equipment operators or truck drivers may stay in their equipment during loading and unloading if the equipment is properly equipped with a cab shield or adequate canopy.

Warning Systems for Mobile Equipment—The following steps should be taken to prevent vehicles from accidentally falling into the trench:

- Barricades must be installed where necessary.
- Where an operator's view of the edge of an excavation is obstructed, a warning system, such as hand or mechanical signals must be used.
- Stop logs must be installed if there is a danger of vehicles falling into the trench.
- Soil should be graded away from the excavation; this will assist in vehicle control and channeling of run-off water.

Hazardous Atmospheres and Confined Spaces—Employees shall not be permitted to work in hazardous and/or toxic atmospheres. Such atmospheres include those with:

- Less than 19.5 percent or more than 23.5 percent oxygen;
- A combustible gas concentration greater than 20 percent of the lower flammable limit; and
- Concentrations of hazardous substances that exceed those specified in the *Threshold Limit Values for Airborne Contaminants* established by the ACGIH (American Conference of Governmental Industrial Hygienists).

All operations involving such atmospheres must be conducted in accordance with OSHA requirements for occupational health and environmental controls (see Subpart D of 29 CFR 1926) for personal protective equipment and for lifesaving equipment (see Subpart E, 29 CFR 1926). Engineering controls (e.g., ventilation) and respiratory protection may be required.

Some trenches qualify as confined spaces. When this occurs, compliance with the Confined Space Program and company procedures is required.

Hazardous conditions might exist in a trench when excavating near a leaking utility pipe or underground storage tank. Geological conditions also can create hazardous conditions. Consider the following prior to entry to test for atmospheric contaminants where hazardous conditions could reasonably be expected:

- Testing should be conducted before employees enter the trench and should be done regularly to ensure that the trench remains safe.
- The frequency of testing should be increased if equipment is operating in the trench.
- Testing frequency should also be increased if welding, cutting or burning is done in the trench.

Employees required to wear respiratory protection must be trained, fit-tested and enrolled in the company's Respiratory Protection Program.

Emergency Rescue Equipment—Emergency rescue equipment is required when a hazardous atmosphere exists or can reasonably be expected to exist. Requirements are as follows:

- Respirators must be of the type suitable for the exposure. Employees must be trained in their use and a respirator program must be instituted.
- Attended (at all times) lifelines must be provided when employees enter bell-bottom pier holes, deep confined spaces, or other similar hazards.
- Employees who enter confined spaces must be trained.

Emergency Response—Emergency response for all excavations should be preplanned. A phone call should be made prior to the excavation to determine who would perform a trench collapse rescue. Also determine what equipment, if any, is needed at the site for the rescue team. Larger local fire departments will usually bring their own equipment. A rural department might not be as well equipped or trained.

Standing Water—Methods for controlling standing water and water accumulation must be provided and should consist of the following if employees are permitted to work in the excavation:

- Use of special support or shield systems approved by a registered professional engineer.
- Water removal equipment, i.e. well pointing, used and monitored by a competent person.
- Safety harnesses and lifelines used in conformance with 29 CFR 1926.104.

- Surface water diverted away from the trench.
- Employees removed from the trench during rainstorms.
- Trenches carefully inspected by a competent person after each rain and before employees are permitted to re-enter the trench.

Inspections

The competent person _____ is required to conduct inspections:

- Daily and before the start of each shift by using (company's name here) "Daily Trenching Inspection Log" found at the end of this program.
- As dictated by the work being performed in the trench.
- After every rainstorm.
- After other events that could increase hazards, such as snowstorm, windstorm, thaw, earthquake, dramatic change in weather, etc.
- When fissures, tension cracks, sloughing, undercutting, water seepage, bulging at the bottom or other similar conditions occur.
- When there is a change in the size, location or placement of the spoil pile.
- When there is any indication of change or movement in adjacent structures.

Daily Trenching Inspection Log

Date:	Signature of Competent Person:
Weather:	Project:
Was "One Call System" contacted, and locations marked near excavation: Yes _____ No _____	
Utilities protected: Yes _____ What type: _____ (water, sewer, gas or other structures) No _____	
Purpose of trenching: Drainage _____ Water _____ Gas _____ Sewer _____ Other _____	
Manual soil test conducted: Yes _____ What type: _____ No _____	
Visual soil tests conducted: Yes _____ What type: _____ No _____	
Type of Soil: Stable Rock _____ Type A _____ Type B _____ Type C _____	
Measurement of Trench: Depth _____ Length _____ Width _____	
Surface Encumbrances: Yes _____ What type: _____ Supported or Removed: _____ No _____	
Water Conditions: Wet _____ Dry _____ Submerged _____	
Excavated spoils maintained two feet or more from edge of excavation: Yes _____ No _____	
Access to and exit from the trench provided with a fixed means of egress, within 25 feet of workers: Yes _____ No _____	
Employees exposed to public vehicular traffic: (proper protective clothing) Yes _____ No _____	
Hazardous atmospheres: Yes _____ (refer to Confined Space procedures and monitor for toxic gas) No _____	
Trench or excavation exposed to vehicular traffic exhaust emissions: Yes _____ (refer to Confined Space procedures and Monitor for toxic gases) No _____	
Barriers provided all remote trench and excavations, wells, pits, shafts, etc. Yes _____ No _____	
Walkways, bridges over excavations greater than six feet provided guardrail: Yes _____ No _____	
Hard hats worn by all employees: Yes _____ No _____	
Employees protected from loose rock or soil: Yes _____ No _____	

Warning system established and used when mobile equipment is operating near edge of excavation.

Yes____ No____

Employees provided training: Yes____ No____

Employees enter excavation as authorized by the competent person.

Yes____ No____

Inspections after rainstorms: Yes____ No____

Periodic trench/excavation inspections: Yes____ No____ Times: _____

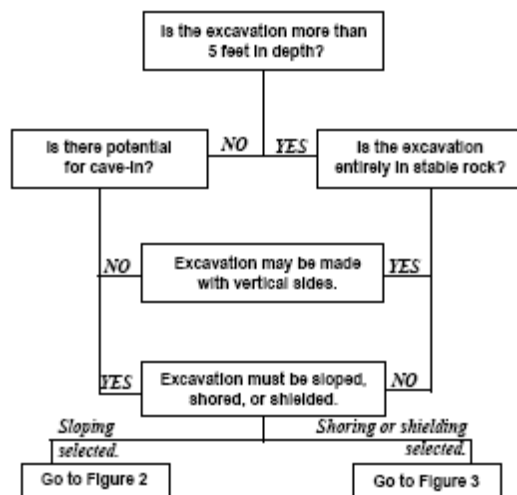
Protection Decision Tree Diagram

Appendix F to Division 3, Subdivision P

Selection of protective systems

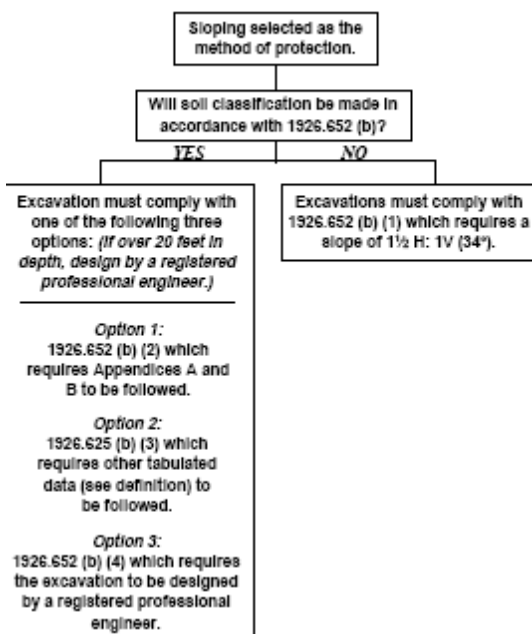
The following figures are a graphic summary of the requirements in subdivision P for excavations 20 feet or less in depth. Protective systems for use in excavations more than 20 feet in depth must be designed by a registered professional engineer in accordance with 1926.652 (b) and (c).

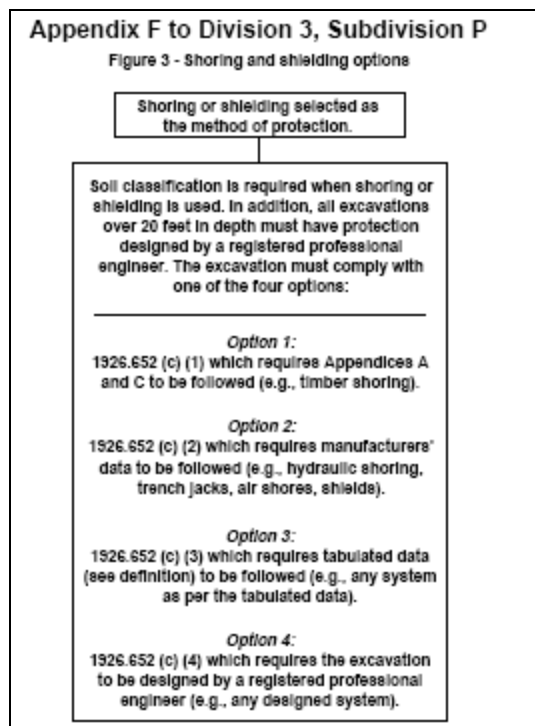
Figure 1 - Preliminary decisions



Appendix F to Division 3, Subdivision P

Figure 2 - Sloping options





Source: OSHA 29 CFR 1926 Subpart P, Appendix F

**Timber Shoring Charts
Tables C-1.1 to c-2.3 of OSHA 1926
Subpart P, Appendix C**

Notes for all tables:

1. Member sizes at spacings other than indicated are to be determined as specified in 1926.652(c), "Design of Protective Systems."
2. When conditions are saturated or submerged use Tight Sheeting. Tight Sheeting refers to the use of specially-edged timber planks (e.g., tongue and groove) at least three inches thick, steel sheet piling, or similar construction that when driven or placed in position provide a tight wall to resist the lateral pressure of water and to prevent the loss of backfill material. Close Sheeting refers to the placement of planks side-by-side allowing as little space as possible between them.
3. All spacing indicated is measured center to center.
4. Wales to be installed with greater dimension horizontal.
5. If the vertical distance from the center of the lowest crossbrace to the bottom of the trench exceeds two and one-half feet, uprights shall be firmly embedded or a mudsill shall be used. Where uprights are embedded, the vertical distance from the center of the lowest crossbrace to the bottom of the trench shall not exceed 36 inches. When mudsills are used, the vertical distance shall not exceed 42 inches. Mudsills are wales that are installed at the tow of the trench side.
6. Trench jacks may be used in lieu of or in combination with timber crossbraces.
7. Placement of crossbraces. When the vertical spacing of crossbraces is four feet, place the top crossbrace no more than two feet below the top of the trench. When the vertical spacing of crossbraces is five feet, place the top crossbrace no more than 2.5 feet below the top of the trench.

Table C-1.1
Timber Trench Shoring—Minimum Timber Requirements *
Soil Type A $P(a) = 25 \times H + 72$ psf (2 ft Surcharge)

SIZE (ACTUAL) AND SPACING OF MEMBERS **							
DEPTH CROSS BRACES							
OF							
HORIZ. WIDTH OF TRENCH (FEET) VERT.							
TRENCH SPACING						SPACING	
(FEET)	UP TO	UP TO	UP TO	UP TO	UP TO	15	(FEET)
	(FEET)	4	6	9	12		
5	UP TO 6	4X4	4X4	4X6	6X6	6X6	4
TO 8	UP TO 4X4	4X4	4X6	6X6	6X6		4
10	UP TO 10	4X6	4X6	4X6	6X6	6X6	4
	UP TO 12	4X6	4X6	6X6	6X6	6X6	4
10	UP TO 6	4X4	4X4	4X6	6X6	6X6	4
TO 8	UP TO 4X6	4X6	6X6	6X6	6X6		4
15	UP TO 10	6X6	6X6	6X6	6X8	6X8	4
	UP TO 12	6X6	6X6	6X6	6X8	6X8	4
15	UP TO 6	6X6	6X6	6X6	6X8	6X8	4
TO 8	UP TO 6X6	6X6	6X6	6X8	6X8		4
20	UP TO 10	8X8	8X8	8X8	8X8	8X10	4
	UP TO 12	8X8	8X8	8X8	8X8	8X10	4
OVER 20	SEE NOTE 1						

Table C-1.1 [Continued]
 Timber Trench Shoring -- Minimum Timber Requirements *
 Soil Type A P(A) = 25 X H + 72 Psf (2 Ft Surcharge)

SIZE (ACTUAL) AND SPACING OF MEMBERS **							
DEPTH OF TRENCH	WALES	VERT. SPACING	UPRIGHTS	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)			
SIZE (FEET)	(IN)	(FEET)	CLOSE	4	5	6	8
5	Not Req'd	---			2X6		
TO 10	Not Req'd	---				2X8	
	8X8	4		2X6			
	8X8	4			2X6		
10	Not Req'd	---			3X8		
	8X8	4	2X6				
TO 15	8X10	4		2X6			
	10X10	4			3X8		
	6X8	4	3X6				
15	8X8	4	3X6				
TO 20	8X10	4	3X6				
	10X10	4	3X6				
OVER 20	SEE NOTE 1						

* Mixed oak or equivalent with a bending strength not less than 850 psi.

** Manufactured members of equivalent strength may be substituted for wood.

Table C-1.2

Timber Trench Shoring -- Minimum Timber Requirements *

Soil Type B $P(A) = 45 \times H + 72$ Psf (2 Ft Surcharge)

SIZE (ACTUAL) AND SPACING OF MEMBERS **							
DEPTH OF	CROSS BRACES						
	HORIZ. TRENCH (FEET)	WIDTH OF TRENCH (FEET)					VERT. SPACING (FEET)
	SPACING	UP TO (FEET)	UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15
5	UP TO 6	4X6	4X6	6X6	6X6	6X6	5
TO 10	UP TO 8	6X6	6X6	6X6	6X8	6X8	5
	UP TO 10	6X6	6X6	6X6	6X8	6X8	5
	See Note 1						
10	UP TO 6	6X6	6X6	6X6	6X8	6X8	5
TO 15	UP TO 8	6X8	6X8	6X8	8X8	8X8	5
	UP TO 10	8X8	8X8	8X8	8X8	8X10	5
	See Note 1						
15	UP TO 6	6X8	6X8	6X8	8X8	8X8	5
TO 20	UP TO 8	8X8	8X8	8X8	8X8	8X10	5
	UP TO 10	8X10	8X10	8X10	8X10	10X10	5
	See Note 1						
OVER 20	SEE NOTE 1						

Table C-1.2 [Continued]

Timber Trench Shoring -- Minimum Timber Requirements *

Soil Type B $P(A) = 45 \times H + 72$ Psf (2 Ft Surcharge)

SIZE (ACTUAL) AND SPACING OF MEMBERS **							
DEPTH							
OF	WALES		UPRIGHTS				
TRENCH	VERT.		MAXIMUM ALLOWABLE HORIZONTAL SPACING				
SIZE	SPACING		(FEET)				
(FEET)	(IN)	(FEET)	CLOSE	2	3		
5	6X8	5		2X6			
TO	8X10	5		2X6			
10	10X10	5		2X6			
	8X8	5	2X6				
10	10X10	5	2X6				
TO	10X12	5	2X6				
15							
	8X10	5	3X6				
15	10X12	5	3X6				
TO	12X12	5	3X6				
20							
OVER	SEE NOTE 1						
20							

* Mixed oak or equivalent with a bending strength not less than 850 psi.

** Manufactured members of equivalent strength may be substituted for wood.

Table C-1.3
Timber Trench Shoring -- Minimum Timber Requirements *
Soil Type C P(A) = 80 X H + 72 Psf (2 Ft Surcharge)

SIZE (ACTUAL) AND SPACING OF MEMBERS **							
DEPTH OF	CROSS BRACES						
	HORIZ. TRENCH (FEET)	SPACING (FEET)	WIDTH OF TRENCH (FEET)				
			UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15 VERT. SPACING (FEET)
5	UP TO 6	6X8	6X8	6X8	8X8	8X8	5
TO 10	UP TO 8	8X8	8X8	8X8	8X8	8X10	5
	UP TO 10	8X10	8X10	8X10	8X10	10X10	5
	See Note 1						
10	UP TO 6	8X8	8X8	8X8	8X8	8X10	5
TO 15	UP TO 8	8X10	8X10	8X10	8X10	10X10	5
	See Note 1						
15	See Note 1						
	UP TO 6	8X10	8X10	8X10	8X10	10X10	5
TO 20	See Note 1						
OVER 20	SEE NOTE 1						

Table C-1.3 [Continued]
 Timber Trench Shoring -- Minimum Timber Requirements *
 Soil Type C $P(A) = 80 \times H + 72$ Psf (2 Ft Surcharge)

SIZE (ACTUAL) AND SPACING OF MEMBERS **							
DEPTH OF TRENCH	WALES SIZE (FEET)	VERT. SPACING (IN)	UPRIGHTS MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)				
				CLOSE			
5	8X10	5	2X6				
TO							
10	10X12	5	2X6				
	12X12	5	2X6				
	10X12	5	2X6				
10							
	12X12	5	2X6				
TO							
15							
	12X12	5	3X6				
15							
TO							
20							
OVER 20	SEE NOTE 1						

* Mixed oak or equivalent with a bending strength not less than 850 psi.

** Manufactured members of equivalent strength may be substituted for wood.

Table C-2.1
Timber Trench Shoring -- Minimum Timber Requirements *
Soil Type A $P(A) = 25 \times H + 72$ Psf (2 Ft Surcharge)

SIZE (S4S) AND SPACING OF MEMBERS **							
DEPTH	CROSS BRACES						
OF							
	HORIZ.	WIDTH OF TRENCH (FEET)					VERT.
TRENCH	SPACING						SPACING
(FEET)	UP TO (FEET)	UP TO 4	UP TO 6	UP TO 9	UP TO 12	15	(FEET)
5	UP TO 6	4X4	4X4	4X4	4X4	4X6	4
TO 10	UP TO 8	4X4	4X4	4X4	4X6	4X6	4
UP TO 15	UP TO 10	4X6	4X6	4X6	6X6	6X6	4
TO 20	UP TO 12	4X6	4X6	4X6	6X6	6X6	4
UP TO 25	UP TO 6	4X4	4X4	4X4	6X6	6X6	4
TO 30	UP TO 8	4X6	4X6	4X6	6X6	6X6	4
UP TO 35	UP TO 10	6X6	6X6	6X6	6X6	6X6	4
TO 40	UP TO 12	6X6	6X6	6X6	6X6	6X6	4
UP TO 45	UP TO 6	6X6	6X6	6X6	6X6	6X6	4
TO 50	UP TO 8	6X6	6X6	6X6	6X6	6X6	4
UP TO 55	UP TO 10	6X6	6X6	6X6	6X6	6X8	4
TO 60	UP TO 12	6X6	6X6	6X6	6X8	6X8	4
OVER 20	SEE NOTE 1						

Table C-2.1 [Continued]
 Timber Trench Shoring -- Minimum Timber Requirements *
 Soil Type A $P(A) = 25 \times H + 72$ Psf (2 Ft Surcharge)

SIZE (S4S) AND SPACING OF MEMBERS **							
DEPTH OF TRENCH	WALES	VERT. SPACING	UPRIGHTS	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)			
SIZE (FEET)	(IN)	(FEET)	CLOSE	4	5	6	8
5	Not Req'd	Not Req'd			4X6		
TO 10	Not Req'd	Not Req'd				4X8	
	8X8	4		4X6			
	8X8	4			4X6		
	Not Req'd	Not Req'd			4X10		
10	6X8	4	4X6				
TO 15	8X8	4		4X8			
	8X10	4	4X6		4X10		
	6X8	4	3X6				
15	8X8	4	3X6	4x12			
TO 20	8X10	4	3X6				
	8X12	4	3X6	4x12			
OVER 20	SEE NOTE 1						

* Douglas fir or equivalent with a bending strength not less than 1500 psi.

** Manufactured members of equivalent strength may be substituted for wood.

Table C-2.2
Timber Trench Shoring -- Minimum Timber Requirements *
Soil Type B $P(A) = 45 \times H + 72$ Psf (2 Ft Surcharge)

SIZE (S4S) AND SPACING OF MEMBERS **							
DEPTH	CROSS BRACES						
OF							
HORIZ.	WIDTH OF TRENCH (FEET)					VERT.	
TRENCH	SPACING						SPACING
(FEET)	UP TO (FEET)	UP TO 4	UP TO 6	UP TO 9	UP TO 12	15	(FEET)
5	UP TO 6	4X6	4X6	4X6	6X6	6X6	5
TO 10	UP TO 8	4X6	4X6	6X6	6X6	6X6	5
	UP TO 10	4X6	4X6	6X6	6X6	6X8	5
	See Note 1						
10	UP TO 6	6X6	6X6	6X6	6X8	6X8	5
TO 15	UP TO 8	6X8	6X8	6X8	8X8	8X8	5
	UP TO 10	6X8	6X8	8X8	8X8	8X8	5
	See Note 1						
15	UP TO 6	6X8	6X8	6X8	6X8	8X8	5
TO 20	UP TO 8	6X8	6X8	6X8	8X8	8X8	5
	UP TO 10	8X8	8X8	8X8	8X8	8X8	5
	See Note 1						
OVER 20	SEE NOTE 1						

Soil Type B $P(A) = 45 \times H + 72 \text{ Psf (2 Ft Surcharge)}$

* Douglas fir or equivalent with a bending strength not less than 1500 psi.
** Manufactured members of equivalent strength may be substituted for wood.

Table C-2.3
Timber Trench Shoring -- Minimum Timber Requirements *
Soil Type C P(A) = 80 X H + 72 Psf (2 Ft Surcharge)

SIZE (S4S) AND SPACING OF MEMBERS **							
DEPTH OF	CROSS BRACES						
	HORIZ. TRENCH (FEET)	SPACING (FEET)	WIDTH OF TRENCH (FEET)				
			UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15 (FEET)
5	UP TO 6	6X6	6X6	6X6	6X6	8X8	5
TO 10	UP TO 8	6X6	6X6	6X6	8X8	8X8	5
	UP TO 10	6X6	6X6	8X8	8X8	8X8	5
	See Note 1						
10	UP TO 6	6X8	6X8	6X8	8X8	8X8	5
TO 15	UP TO 8	8X8	8X8	8X8	8X8	8X8	5
	See Note 1						
15	See Note 1						
	UP TO 6	8X8	8X8	8X8	8X10	8X10	5
TO 20	See Note 1						
	See Note 1						
OVER 20	SEE NOTE 1						

TABLE C-2.3 [Continued]
 TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS *
 SOIL TYPE C $P(a) = 80 \times H + 72$ psf (2 ft Surcharge)

SIZE (S4S) AND SPACING OF MEMBERS **							
DEPTH OF TRENCH	WALES SPACING	VERT. (FEET)	UPRIGHTS MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)				
SIZE (FEET)	(IN)	(FEET)	CLOSE				
5	8X8	5	3X6				
TO							
10	10X10	5	3X6				
	10X12	5	3X6				
	10X10	5	4X6				
10							
	12X12	5	4X6				
TO							
15							
	10X12	5	4X6				
15							
TO							
20							
OVER	SEE NOTE 1						
20							


* Douglas fir or equivalent with a bending strength not less than 1500 psi.

** Manufactured members of equivalent strength may be substituted for wood.

Confined Space Entry

The purpose of this program is to ensure proper protection is taken for all employees working in confined spaces.

Responsibility

It is the desire of to protect our employees. The company  **PUTZHEIM CRESCENT INCORPORATED** will:

- Evaluate the workplace to determine if any spaces are permit-required confined spaces.
- Inform potentially exposed employees of the permit-required confined spaces.
- Determine if employees will not be allowed to enter permit spaces, and outline measures to prevent employees from entering permit spaces.
- If it is determined employees will enter permit-required spaces, a written permit space entry program must be developed and implemented.

The company **safety officer or supervisor** is responsible for this program and has authority to make decisions to ensure its success. Copies of the written program may be obtained from the main office. A copy should be located at the jobsite trailer.

Program Review and Update

The Confined Space Program will be reviewed and updated under these circumstances:

- When the company identifies changing conditions, which cause the current plan to lose its maximum protection.
- A review of the permit-required confined space program (using canceled permits retained within one year after each entry) indicates revisions to the program as necessary.
- When the safety officer or supervisor observes a need for review due to employees not following safety requirements.

General Requirements

We will use alternate procedures for entering a permit space under the conditions below:

- Employees entering a permit space need not comply with the following parts of this program:
 - Permit Required Confined Space
 - Permit System
 - Entry Permit
 - Duties of Authorized Entrants
 - Duties of Attendants
 - Duties of Supervisors
 - Rescue and Emergency Services-providing that
 1. It has been demonstrated and documented the only hazard is actual or potentially hazardous atmosphere.

2. It has been determined that the forced air ventilation alone is sufficient to maintain safe entry.
3. The monitoring and inspection data required by this program is being used.
4. Initial entry is not needed to collect data the above.
5. The determinations and data required above are documented and available to employees who enter the space.

Entry under the terms above must be performed in accordance with the following requirements:

Any condition making it unsafe to remove an entrance cover will be eliminated before the cover is removed.

- Before covers are removed, the entrance will be guarded by a barrier that will prevent an employee from accidentally falling through the opening. The barrier will protect employees in the space from foreign objects entering the space. This exposure would be commonly found with a manhole.
- Before an employee enters the space, the internal atmosphere will be tested with a calibrated direct-reading instrument, for the following conditions in the order given:
 - Oxygen content **must be 19.5 to 23.5 percent.**
 - Flammable gases and vapors-lower flammable limits of gases and vapors must be under 10 percent.
 - Potential toxic air contaminants.

**** Record continuous monitoring results every two hours**

Continuous Monitoring** Tests To Be Taken	Permissible Entry Level
Percent of oxygen	19.5 to 23.5 percent
Lower flammable limit	Under 10 percent
Carbon Monoxide	+35 parts per million
Aromatic Hydrocarbon	+1 parts per million * 5 parts per million
Hydrogen Cyanide(skin)	* 4 parts per million
Hydrogen Sulfide	+10 parts per million *15 parts per million
Sulfur Dioxide	+2 parts per million * 5 parts per million
Ammonia	*35 parts per million

***Short-term exposure limit: Employee can work in the area up to 15 minutes.**

+8 Hour Time Weighted Average: Employee can work in area eight hours or longer with appropriate respiratory protection.

- There may be no hazardous atmosphere within the space whenever any employee is inside.
- Continuous forced air ventilation will be used as follows:
 1. An employee may not enter the space until forced air ventilation has eliminated an hazardous atmosphere.

2. Forced air ventilation will be directed to ventilate the immediate areas where an employee is or will be, and will continue until all employees have left the space.
3. The air supply for the ventilation will be clean and may not increase the hazard.

The atmosphere within the space will be continuously tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

If a hazardous atmosphere is detected during entry:

1. Each employee will leave the space immediately.
2. The space will be evaluated to determine how the hazardous atmosphere developed.
3. Measures will be implemented to protect employees from the hazardous atmosphere before a subsequent entry.
4. Before each entry, the employer will document the space is safe for entry and the measures above have been taken with a written certification giving the date, location of the space and signature of the person providing the certification.





Non-Permit Space

A space classified as a permit-required space may be reclassified as a non-permit space:

- If the permit space poses no actual or potential atmospheric hazards and if all hazards are eliminated without entering the space.
- If it is necessary to enter the permit space to eliminate hazards, such entry will be performed under the following parts of this program:
 - If testing and inspection demonstrate that the hazards have been eliminated.
 - If the safety officer has documented the basis for determining all hazards have been eliminated through a certification that contains the date, location of the space, and the signature of the person making the certification.
 - If hazards arise within a permit space that has been declassified to a non-permit space, each employee will exit the space. The safety officer will reevaluate the space and determine if it must be reclassified as a permit space.

Outside Subcontractors

In addition to complying with the above-mentioned requirements, each contractor who performs permit space entry will:

- Obtain any available information regarding permit space hazards and entry operations from  **PUTZHEIM CRESCENT INCORPORATED**
- Coordinate entry operations with  **PUTZHEIM CRESCENT INCORPORATED**, when both  **PUTZHEIM CRESCENT INCORPORATED** employees and contractor personnel work in or near permit spaces, as required in this program.
- Inform  **PUTZHEIM CRESCENT INCORPORATED** of the permit space program the contractor will follow and any hazards confronted or created in permit spaces.

Permit-Required Confined Space

The following measures are necessary to prevent unauthorized entry to a confined space:

1. The safety officer/supervisor will identify and evaluate the hazards of the permit spaces before employees enter them by performing atmospheric testing.

2. We will provide the following equipment at no cost to our employees, and maintain the equipment properly. Supervisors will ensure employees use the equipment properly:
 - a) Test and monitor equipment needed to evaluate the permit space conditions.
 - b) Ventilating equipment needed to obtain acceptable entry conditions.
 - c) Two-way communication equipment capable of obtaining emergency services.
 - d) Personal protective equipment appropriate for the location provided by the supervisor.
 - e) Lighting equipment needed to enable safe work in and exit from the space.
 - f) Barriers and shields to protect entrants from external hazards.
 - g) Equipment needed for safe ingress and egress.
 - h) Rescue and emergency equipment to comply with this program.
 - i) Any other equipment necessary for safe entry and rescue.
3. There will be at least one attendant outside the permit space for the duration of entry operations.
4. If multiple spaces are to be monitored by a single attendant, means and procedures to enable the attendant to respond to an emergency in one or more spaces without distraction from the attendant's responsibility under this program will be provided.
5. The safety officer or supervisor will designate the persons who are to have active roles in entry operations, their duties, and provide each with the training required by this program.
6. The safety officer or supervisor will develop and implement a procedure for summoning rescue and emergency services, for rescuing entrants, and for preventing unauthorized personnel from attempting rescue.
7. The safety officer or supervisor will develop and implement procedures to coordinate entry operations when employees of more than one employer are entering a permit space so they do not endanger each other.
8. The safety officer or supervisor will develop and implement a system for the preparation, issuance, use and cancellation of entry permits.
9. The safety officer or supervisor will develop and implement procedures to coordinate entry after operations are completed.

Permit System

1. Before entry is authorized, the **safety officer or supervisor** will document the completion of the measures below by preparing an entry permit. The **safety officer or supervisor** will develop and implement the means, procedures and practices necessary for the entry, including:
 - a) Specifying acceptable entry conditions, including recording of gas detector readings,
 - b) Isolating the permit space,
 - c) Purging, flushing or ventilating the permit space to eliminate or control atmospheric hazards,
 - d) Providing barriers as necessary to protect entrants from external hazards, and
 - e) Verifying conditions in the permit space are acceptable for entry throughout the duration of an authorized entry.
2. Before entry, the **safety officer or supervisor** will sign the permit to authorize entry.
3. The completed permit will be made available to all authorized entrants to confirm pre-entry preparations have been completed.
4. The duration of the permit will not exceed the time required to complete the assigned task or job.
5. The **safety officer or supervisor** will terminate entry and cancel the permit when:
 - a) Operations have been completed, or
 - b) A condition not allowed under the entry permit arises in or near the permit space.

The **safety officer or supervisor** retains each entry permit (**to be located in**) for at least one year to facilitate the review of the permit-required confined space program. Any problems encountered during an entry operation will be noted on the permit so appropriate revisions to the program can be made.

Entry Permit

The entry permit that authorizes entry into a permit space shall identify:

1. The space to be entered,
2. The purpose of the entry,
3. The date and authorized duration of the entry,
4. The authorized entrants,
5. The personnel serving as attendants,
6. The individual serving as the entry supervisor;
7. The hazards of the permit space to be entered,
8. The measures used to isolate the space and eliminate or control hazards before entry;
9. The acceptable entry conditions,
10. The results of initial and periodic tests performed below, accompanied by the names or initials of the testers and when the tests were performed:
 - a. Test conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized to begin,
 - except if isolation of the space is infeasible because the space is larger or is part of a continuous system (such as sewer), pre-entry testing will be performed to the extent feasible before entry is authorized and,
 - if entry is authorized, entry conditions will be continuously monitored in the areas where authorized entrants are working.
 - b. Test or monitor the permit space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations and;
11. When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, then for toxic gases and vapors.
12. The rescue and emergency services that can be called and how to call them,
13. The communication procedures used by entrants and attendants to maintain contact with each other,
14. Equipment, such as testing equipment, to be provided for compliance with 29 CFR 1910-146
15. Any other information necessary to ensure employee safety and
16. Any additional permits, such as Hot Work Permits, issued for work in the space.

Training

Supervisors will provide training so employees acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned. Training will be provided:

- Before the employee is assigned duties under this regulation.
- Before there is a change in permit space operation that presents a hazard about which an employee has not previously been trained.
- Whenever the supervisor has reason to believe there are inadequacies in the employees' knowledge of these procedures.

The **safety officer or supervisor** will certify the required training has been accomplished and the employee is proficient in the duties.

Duties of the Authorized Entrants

The safety officer or supervisor shall ensure all authorized entrants:

- Know the hazards they may encounter during entry.
- Make proper use of the required equipment.
- Communicate with the attendant as necessary so the attendant can monitor the entrants and alert them of the need to evacuate as required.
- Alert the attendant when:
 - The entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or
 - The entrant detects a prohibited condition.

Exit from the permit space as quickly as possible when:

- An order to evacuate is given by the attendant or supervisor.
- The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
- The entrant detects a prohibited condition.
- An evacuation alarm is activated.

Duties of Attendants

The safety officer shall ensure that each attendant:

- Knows hazards that may be encountered during entry.
- Is aware of possible behavioral effects of hazard exposure.
- Continuously maintains an accurate count of entrants.
- Remains outside the permit space during entry until relieved by another attendant.
- Communicates with entrants as necessary to monitor their status and to alert them of the need to evacuate.
- Monitors activities inside and outside the space to determine if it is safe and orders evacuation immediately if the attendant:
 - detects any prohibited condition,
 - detects the behavioral effects of hazard exposure in an entrant,
 - detects a situation outside the space that could endanger entrants, or
 - cannot effectively and safely perform all duties required.
- Summon rescue and other emergency services as soon as it is determined that entrants may need assistance to escape.
- Takes action when unauthorized persons approach or enter a permit space while entry is underway.
- Performs non-entry rescues as specified by the employer's rescue procedure.
- Performs no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

Duties of Entry Supervisors

The safety officer or supervisor will ensure that each entry supervisor:

- Knows and understands the hazards that may be encountered during entry.
- Verifies the appropriate entries have been made on the permit.
- Ensures all tests specified by the permit have been conducted.

- Ensures all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
- Terminates the entry and cancels the permit as required by this program.
- Verifies rescue services are available and the means for summoning them are operable.
- Removes unauthorized individuals who enter or attempt to enter the permit space during operations.
- Determines entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

Rescue and Emergency Services

The following requirements apply when employees enter permit spaces to perform rescue services:

- The safety officer will ensure the rescue personnel is provided with, and is trained to use, personnel protective equipment necessary for making rescues.
- Each member of the rescue service will be trained to perform assigned rescue duties. They will also receive the training required of authorized entrants under this plan.
- Each member of the rescue service will practice making rescues at least once every 12 months.
- Each member of the rescue service will be trained in basic first-aid and CPR.
- If rescue services are performed by emergency services or subcontractors we will:
 - Inform the rescue service of the hazards they may confront when called on to perform a rescue, and
 - Provide the rescue service with access to all permit spaces from which rescue may be necessary to allow them to develop rescue plans and practice rescues.
- To facilitate non-entry rescue, retrieval systems or methods will be used whenever an authorized entrant enters a permit space, unless this would increase risk or would not assist the rescue.

Retrieval systems will meet the following requirements:

- Each authorized entrant will use a chest or full body harness with a retrieval line. Wristlets may be used in lieu of a harness if the employer can demonstrate they are a safer, more effective alternative.
- The other end of the retrieval line will be attached to a mechanical device or fixed point outside the permit space so rescue can begin as soon as it becomes necessary.
- If an injured entrant is exposed to a substance for which a Material Safety Data Sheet (MSDWS) or other similar written information is required, that sheet or written information will be made available to the medical facility treating the exposed entrant.

Appendix A

Confined Space Pre-Entry Checklist (Sewer Entry Permit)

A confined space is either entered through an opening other than a door (such as manhole or side port) or requires the use of a ladder or rungs to reach the working level and test results are satisfactory. This checklist must be completed whenever the job site meets this criteria.

	Yes	No
1. Did your survey of the surrounding area show it to be free of hazards such as drifting vapors from tanks, piping or sewers?	()	()
2. Does your knowledge of industrial or other discharges indicate this area is likely to remain free of dangerous air contaminants?	()	()
3. Are you certified in operation of the gas monitor to be used?	()	()
4. Has a gas monitor functional test (Bump test) been performed this shift on the gas monitor to be used?	()	()
5. Did you test the atmosphere of the confined space prior to the entry?	()	()
6. Did the atmosphere of the confined space read in the safe range prior to entry?	()	()
7. Will the atmosphere be continuously monitored while the space is occupied?	()	()

Contact _____ County for personnel rescue by local fire department in the event of an emergency. If Rescue Squad is on-site, contact _____.

Note: If any of the above questions are answered “no,” do not enter. Contact supervisor immediately!

Job

Location _____.

Supervisor Signature _____ Date _____.

Appendix B

Confined Space Entry Permit Pre-Entry/Entry Checklist

Date _____ Time _____ a.m. p.m. (circle one)

Issued by: _____

Job Site: _____

Equipment to be worked on: _____

Pre-Entry (See Safety Procedure)

1. Atmospheric checks:

Time	_____	a.m. p.m. (circle one)
Oxygen	_____	%
Explosives	_____	%
Toxic	_____	PPM

2. Source isolation (No Entry):

	N/A	Yes	No
Pumps or lines blinded	()	()	()
Disconnected or blocked	()	()	()

3. Ventilation modification:

	N/A	Yes	No
Mechanical	()	()	()
Natural ventilation only	()	()	()

4. Atmospheric check after isolation and ventilation:

Time	_____	a.m. p.m. (circle one)
Oxygen	_____	%
Explosives	_____	%
Toxic	_____	PPM

If conditions are in compliance with the above requirements and there is no reason to believe conditions may change, proceed to the Permit Space Pre-Entry Checklist. If conditions are not in compliance with the above requirements or there is a reason to believe conditions may change, proceed to the Entry Checklist of this Permit.

Date and Time Expires: _____

Work to be performed: _____

Entry (See Safety Procedure)

Yes No

1. Entry, standby and back-up persons:			
Successfully completed required training?	()	()	
Is training current?	()	()	
2. Equipment:			
Direct reading gas monitor tested?	N/A	Yes	No
	()	()	()
Safety harness and lifelines for entry and standby persons?	()	()	()
Hoisting equipment?	()	()	()
Powered communications?	()	()	()
Self Contained Breathing Apparatus for entry and standby persons?	()	()	()
Protective clothing?	()	()	()
Is all electrical equipment listed Class I, Division I, Group D and Non-sparking tools?	()	()	()
3. Rescue Procedures: _____			

We have reviewed the work authorized by this permit and the information contained here in. Written instructions and safety procedures have been received and are understood. Entry cannot be approved if any questions are answered “No”. This permit is not valid unless all appropriate items are completed.

Permit and Checklist Prepared By: (Supervisor) _____

Approved By: (Unit Supervisor) _____

Reviewed By: (Confined Space Operations Personnel):

 (Printed Name and Signature)

This permit is to be kept at the job site. Return job site copy to Safety Office following job completion.

Three copies should be maintained:
 Safety Office
 Unit Supervisor
 Job Site

Entry Permit

Confined Space _____ Hazardous Area _____

Permit valid for eight hours only. All copies of permit will remain at job site until job is completed.Site Locations and Description: _____
_____Purpose of Entry: _____

Supervisors in Charge of Crews: _____

Name: _____ Phone: _____

Name: _____ Phone: _____

Name: _____ Phone: _____

Type of Crew: _____

Bold denotes minimum requirements to be completed and reviewed prior to entry.

Note: Items that do not apply should have N/A entered in the blank.

Requirements Completed	Date	Time
Lock Out/De-energize/Try-out	_____	_____
Line(s) Broken, Capped and Blanked	_____	_____
Purge, Flush and Vent	_____	_____
Ventilation	_____	_____
Secure Area (Post and Flag)	_____	_____
Resuscitator-Inhalator	_____	_____
Standby Safety Personnel	_____	_____
Full Body Harness with "D"	_____	_____
Emergency Escape Retrieval Equipment	_____	_____
Lifelines	_____	_____
Fire Extinguisher	_____	_____
Explosion Proof Lighting	_____	_____
Protective Clothing	_____	_____
Air Purifying Respirator(s)	_____	_____
Burning and Welding Permit	_____	_____

**** Record continuous monitoring results every two hours**

Continuous Monitoring** Tests To Be Taken	Permissible Entry Level
Percent of oxygen	19.5 to 23.5 percent
Lower flammable limit	Under 10 percent
Carbon Monoxide	+35 parts per million
Aromatic Hydrocarbon	+1 parts per million * 5 parts per million
Hydrogen Cyanide(skin)	* 4 parts per million
Hydrogen Sulfide	+10 parts per million *15 parts per million
Sulfur Dioxide	+2 parts per million * 5 parts per million
Ammonia	*35 parts per million

***Short-term exposure limit: Employee can work in the area up to 15 minutes.
+8 Hour Time Weighted Average: Employee can work in area eight hours or longer with appropriate respiratory protection.**

Remarks: _____

Gas Tester Name and Check # Instrument(s) used Model and/or Type Serial and/or Unit #: _____

Safety Standby Person is required for *all* confined space work

Safety Standby Person

Check No.

Supervisor authorizing entry:

Department _____ Phone _____

All Above Conditions Satisfied _____ Yes No (circle one)

Emergency Phone Numbers

Fire _____ Ambulance _____

Safety Director _____ Gas Coordinator _____

**Permit-Required Confined Space Entry
Record Of Training**

Date	Instructor(s)	*Training	Description (See Below)	Employee Name

Training

- Lecture, Group, Hands-on, etc.

Training Description

1. Hazard Recognition
2. Emergency Notification
3. Personal Protective Equipment Usage
4. Lockout and Tagging Procedures
5. Atmosphere Testing Instruments
6. Special Equipment Usage
7. Emergency and Rescue Operations

Permit-Required Confined Space Entry Examples Of Training Topics

Hazard Recognition

1. Is there a residual material remaining on the Permit-Required Confined Space?
2. Is the lighting adequate?
3. Are the inside surfaces slippery and wet?
4. Are the valves locked and tagged?
5. Thoroughly review the Material Safety Data Sheet for the chemicals you may encounter.

Emergency Notification

1. In case of an accident or emergency, who is your first contact, including phone, intercom, beeper or radio number?
2. Is there an emergency siren, bell or other sounding device in the facility? Is there a particular code for different emergencies? When is the device tested?
3. Who is to call the rescue team, rescue squad or others?

Personal Protective Equipment Usage

1. Air Fed or Cartridge Type Respirators
2. SCBA (Self Contained Breathing Apparatus) Training
3. Protective Suits and Gloves
4. Hearing Protection
5. Eye Protection
6. Protective Footwear

Lockout and Tagging Procedures

1. Is production department sign off required? Daily and weekly production meeting notification? Who is contact for coordination?
2. Has the tagging system been color-coded? What is tagging procedure?
3. How is a lock out of a particular device initiated?

Atmospheric Testing

1. Who performs the instrument calibration?
2. Perform training with each specific instrument.
3. Review the listing of LEL's (Lower Explosive Limits) and IDLH (Immediate Dangerous to Life or Health) concentrations on the chemicals likely to be encountered. Refer to Material Safety Data Sheets.

Special Equipment Usage

1. Specialized material handling/vacuum system to remove residual material from Permit-Required Confined Space.
2. Lifting apparatus required for Permit-Required Confined Space Entry Equipment.

Emergency And Rescue Methods and Procedures

Review how an employee is to be removed from a Permit-Required Confined Space. What equipment is to be used, how many people (minimum) will be required?

Source reference:

http://www.dolir.state.mo.us./ls/safetyconsultation/employer_assistance/ConfinedSpaces.htm

Welding

Welding occurs as a cutting, finishing and binding process of many metals. There are several hazards associated with this exposure such as fire, respiration of hazardous materials, ultra violet light, flying particles and failure of pressurized gas cylinders. The object being welded, location of welding operations and welding sticks are also hazard factors. Trained personnel shall perform welding operations. Welding in a Confined Space will require a Confined Space permit with all Confined Space Entry safety procedures enforced.

Responsibilities

Owner/CEO

Responsible for ensuring the welding safety program is implemented by company supervisors and all required equipment is provided to the employees.

Supervisor

Responsible for ensuring employees are trained and operate safe welding procedures. Supervisors will enforce use of personal protective equipment. Additionally, the supervisor will recognize welding hazards and take corrective actions if needed.

Employee

Responsible for following the company welding safety procedures and notifying the supervisor of welding hazards and unsafe conditions. The employee will report any incidents that might or did result in an accident.

Compressed gas cylinders safety

Employees who operate, move and store gas cylinders shall perform the following operations to ensure safe use of pressurized cylinders:

- Valve protection caps shall be in place and secured.
- When cylinders are hoisted, they shall be secured on a cradle, slingboard or pallet. They shall not be hoisted or transported by means of magnets or choker slings.
- Cylinders shall be moved by tilting and rolling on the bottom edges.
- Cylinders transported by powered vehicles shall be secured in a vertical position.
- Valve protection caps shall not be used for lifting cylinders from one vertical position to another. Bars shall not be used under valves or valve protection caps to pry cylinders loose when frozen. Warm, not boiling, water shall be used to thaw frozen cylinders caps or knobs loose.
- Regulators shall be removed and valve protection caps put in place before cylinders are moved.
- A suitable cylinder truck, chain or other steadying device shall be used to keep cylinders from being knocked over while in use.
- Cylinder valves shall be closed when not in use.
- Compressed gas cylinders shall be secured in an upright position at all times.

- Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease) by a minimum distance of 20 feet (6.1 m) or by a noncombustible barrier at least five feet (1.5 m) high having a fire-resistance rating of at least one-half hour.
- Inside buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location at least 20 feet (6.1 m) from highly combustible materials such as oil or gasoline. Cylinders should be stored in definitely assigned places away from elevators, stairs or gangways.
- The in-plant handling, storage and utilization of all compressed gases in cylinders, portable tanks, rail tank cars or motor vehicle cargo tanks shall be in accordance with Compressed Gas Association Pamphlet P-1-1965.

Placing Cylinders

- Cylinders shall be kept away from the actual welding or cutting operations. If impractical, fire resistant shields shall be provided.
- Cylinders shall be placed where they cannot become part of an electrical circuit. Electrodes shall not be struck against a cylinder to strike an arc.
- Fuel gas cylinders shall be placed with valve end up whenever they are in use. They shall not be placed in a location where they would be subject to open flame, hot metal or other sources of artificial heat.
- Cylinders containing oxygen, acetylene or other fuel gas shall not be taken into confined spaces.

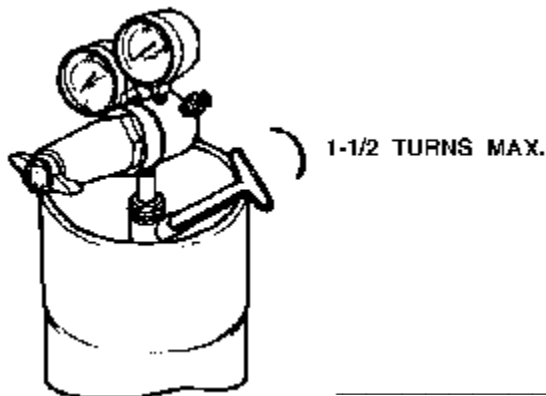
Treatment of Cylinders

- Cylinders shall not be used as rollers or supports.
- No person other than the gas supplier shall attempt to mix gases in a cylinder. No employee shall refill a cylinder. No employee shall use a cylinder's contents for purposes other than those intended by the supplier. All cylinders used shall meet the Department of Transportation requirements published in 49 CFR Part 178, Subpart C, Specification for Cylinders.
- No damaged or defective cylinder shall be used.

Use of Fuel Gas

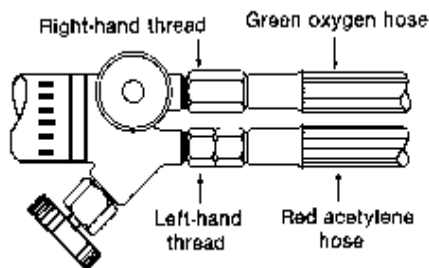
Supervisors shall thoroughly instruct employees in the safe use of fuel gas, as follows:

- A regulator with shutoff valves shall be attached to the cylinder's valve or manifold that dispenses fuel gas through torches or other devices.
- Before a regulator is connected to a cylinder valve, the valve shall be opened slightly and closed immediately. This action is generally termed "cracking" and is intended to clear the valve of dust or dirt that might otherwise enter the regulator. The employee cracking the valve shall stand to the side of the outlet, not in front of it. The valve of a fuel gas cylinder shall not be cracked where the gas would reach welding work, sparks, flame or other possible sources of ignition.
- The cylinder valve shall always be opened slowly to prevent damage to the regulator. Quick closing valves shall not be opened more than one turn. When a special wrench is required, it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel gas flow can be shut off quickly in case of an emergency. In the case of manifolded or coupled cylinders, at least one such wrench shall be



available for immediate use. Nothing shall be placed on top of a fuel gas cylinder, when in use, which may damage the safety device or interfere with the quick closing of the valve.

- Before a regulator is removed from a cylinder valve, the cylinder valve shall always be closed and the gas released from the regulator.



- If a leak is detected around the valve stem at opening, the valve shall be closed and gland nut tightened. If this action does not stop the leak, the cylinder shall not be used, properly tagged and removed from the work area. If the fuel gas leaks from the cylinder valve, rather than from the valve stem, and the gas cannot be shut off, the cylinder shall be properly tagged and removed from the work area. If a regulator attached to a cylinder valve will

effectively stop a leak through the valve seat, the cylinder may remain in the work area but not used.

- If a leak should develop at a fuse plug or other safety device, the cylinder shall be removed from the work area.

Fuel Gas and Oxygen Manifolds

- Fuel gas and oxygen manifolds shall bear the name of the substance they contain in letters at least 1-inch high which shall be either painted on the manifold or on a sign permanently attached to it. These manifolds shall be placed in safe, well ventilated, and accessible locations and not located within enclosed spaces.
- Manifold hose connections, including both ends of the supply hose that lead to the manifold, shall be such that the hose cannot be interchanged between fuel gas and oxygen manifolds and supply header connections. Adapters shall not be used to permit the interchange of hose. Hose connections shall be kept free of grease and oil.
- Manifold and header hose connections shall be capped when not in use.
- Nothing shall be placed on top of a manifold, which will damage the manifold or interfere with the quick closing of the valves.

Hose

- Fuel gas and oxygen hose shall be easily distinguishable from each other. The contrast may be made by different colors or by surface characteristics readily distinguishable by the sense of touch. Oxygen and fuel gas hoses shall not be interchangeable. A single hose having more than one gas passage shall not be used.
- When parallel sections of oxygen and fuel gas hose are taped together, not more than four inches out of 12 inches shall be covered by repair tape.
- All hose in use, carrying acetylene, oxygen, natural or manufactured fuel gas, or any gas or substance which may ignite or enter into combustion or be in any way harmful to employees, shall be inspected at the beginning of each working shift. Defective hose shall be removed from service.
- Hose which has been subject to flashback, or which shows evidence of severe wear or damage, shall be tested to twice the normal pressure to which it is subject, but in no case, less than 300 p.s.i. Defective hose shall not be used.

- Hose couplings shall be of the type that cannot be unlocked or disconnected by means of a straight pull without rotary motion.
- Boxes used for the storage of gas hose shall be ventilated.
- Hoses, cables and other equipment shall be kept clear of passageways, ladders, and stairs.

Torches

- Clogged torch tip openings shall be cleaned with suitable cleaning wires, drills or other devices designed for such purpose.
- Torches in use shall be inspected at the beginning of each working shift for leaking shutoff valves, hose couplings and tip connections. Defective torches shall not be used.
- Torches shall be lighted by friction lighters or other approved devices, and not by matches or from hot work.

Regulators and Gauges

Oxygen and fuel gas pressure regulators, including their related gauges, shall be in proper working order or taken out of service.

Oil and Grease Hazards

Cylinders, cylinder caps and valves, couplings, regulators, hose, and apparatus shall be kept free from oil or greasy substances and shall not be handled with oily hands or gloves. Oxygen shall not be directed at oily surfaces, greasy clothes or within a fuel oil or other storage tank or vessel.

Additional Rules

Reference American National Standards Institute (ANSI), Z49.1-1967, *Safety in Welding and Cutting*, for further details.

Arc Welding And Cutting

Manual Electrode Holders

- Only manual electrode holders shall be used which are specifically designed for arc welding and cutting, and are of a capacity capable of safely handling the maximum rated current required by the electrodes.
- Any current-carrying parts passing through the portion of the holder, which the arc welder holds in his hand, the outer surfaces of the jaws of the holder shall be fully insulated against the maximum voltage encountered to ground.

Welding Cables and Connectors

- All arc welding and cutting cables shall be of the completely insulated, flexible type, capable of handling the maximum current requirements and duty cycle of the work in progress.
- Only cable leads free from repair or splices for a minimum distance of 10 feet from the cable end to which the electrode holder is connected shall be used.
- When any other cable becomes worn to the extent of exposing bare conductors, the portion exposed shall be protected by means of rubber and friction tape.
- When it becomes necessary to connect or splice lengths of cable one to another, substantial insulated connectors of a capacity at least equivalent to that of the cable shall be used. If connections are affected by means of cable lugs, they shall be securely fastened together to give good electrical contact, and the exposed metal parts of the lugs shall be completely insulated.

Ground Returns and Machine Grounding

- A ground return cable shall have a safe current-carrying capacity equal to or exceeding the specified maximum output capacity of the arc welding or cutting unit which it services. When a single ground return cable services more than one unit, its safe current-carrying shall exceed the total specified maximum output capacities of all the units which it services.
- The frames of all arc welding and cutting machines shall be grounded either through a third wire in the cable containing the circuit conductor or through a separate wire which is grounded at the source of the current. Grounding circuits, other than by means of the structure, shall be checked to ensure the circuit between the ground and the grounded power conductor has resistance low enough to permit sufficient current to flow to cause the fuse or circuit breaker to interrupt the current.
- All ground connections shall be inspected to ensure they are mechanically strong and electrically adequate for the required current.

Operating Instructions

Supervisors shall instruct employees in the safe means of arc welding and cutting as follows:

- When electrode holders are to be left unattended, the electrodes shall be removed and the holders shall be so placed or protected that they cannot make electrical contact with employees or conducting objects.
- Hot electrode holders shall not be dipped in water. To do so may expose the arc welder or cutter to electric shock.

- When the arc welder or cutter has occasion to leave his other work or to stop work for any appreciable length of time, or when the arc welding or cutting machine is to be moved, the power supply switch to the equipment shall be opened.
- Any faulty or defective equipment shall be reported to the supervisor.
- A disconnecting means shall be provided in the supply circuit for each motor-generated arc welder, and for each AC transformer and DC rectifier arc welder which is not equipped with a disconnect mounted as an integral part of the welder.
- A switch or circuit breaker shall be provided by which each resistance welder and its control equipment can be isolated from the supply circuit. The ampere rating of this disconnecting means shall not be less than the supply conductor ampacity.

Shielding

Whenever practical, all arc welding and cutting operations shall be shielded by noncombustible or flameproof screen which will protect employees and other persons working in the vicinity from the direct rays of the arc.

Fire Prevention

- Objects to be welded, cut or heated shall be moved to a designated safe location or, if these objects cannot be readily moved, all movable fire hazards in the vicinity shall be taken to a safe place, or otherwise protected. If these objects cannot be moved and if all the fire hazards cannot be removed, positive means shall be taken to confine the heat, sparks and slag.
- Welding, cutting or heating shall not be done where the application of flammable paints, or the presence of other flammable compounds, or heavy dust concentrations creates a hazard.
- Suitable fire extinguishing equipment shall be immediately available in the work area and shall be maintained in a state of readiness for instant use.
- When the welding, cutting or heating operation is such that normal fire prevention precautions are not sufficient, additional personnel shall be assigned to guard against fire while the actual welding, cutting or heating operation is being performed, and for a sufficient period of time after completion of the work to ensure no possibility of fire exists. Such personnel shall be instructed as to the specific anticipated fire hazards and how the firefighting equipment provided is to be used. This is known as a Fire Watch.
- When welding, cutting or heating is performed on walls, floors and ceilings, since direct penetration of sparks or heat transfer may introduce a fire hazard to an adjacent area, the same precautions shall be taken on the opposite side as are taken on the side on which the welding is being performed.
- The gas supply to the torch shall be positively shut off at some point outside the enclosed space whenever the torch is not to be used. Or whenever the torch is left unattended for a substantial period of time, such as during the lunch period.
- The torch and hose shall be removed from the confined space.
- Open end fuel gas and oxygen hoses shall be immediately removed from enclosed spaces when they are disconnected from the torch or other gas-consuming device.
- Except when the contents are being removed or transferred, drums, pails, and other containers which contain or have contained flammable liquids shall be kept closed.
- Empty containers shall be removed to a safe area apart from hot work operations or open flames.

- Drums, containers or hollow structures which have contained toxic or flammable substances shall be filled with water or thoroughly cleaned of such substances, ventilated and tested before welding, cutting or heating is undertaken on them.
- Before heat is applied to a drum, container or hollow structure, a vent or opening shall be provided for the release of any built-up pressure during the application of heat.

Ventilation And Protection In Welding, Cutting And Heating

Mechanical Ventilation

- Mechanical ventilation shall consist of either general mechanical ventilation systems or local exhaust systems.
- Ventilation shall meet OSHA Subpart D of Part 1926, *Occupational Health and Environmental Controls*.
- Contaminated air exhausted from a working space shall be discharged clear of the intake air source.
- All air shall be clean and respirable.
- Oxygen shall not be used for ventilation purposes.

Welding, Cutting, and Heating in Confined Spaces

Except where air line respirators are required or allowed as described below, adequate mechanical ventilation meeting the requirements described above shall be provided whenever welding, cutting or heating is performed in a confined space.

When sufficient ventilation cannot be obtained without blocking the means of access, employees in the confined space shall be protected by air line respirators in accordance with the requirements of OSHA Subpart E of Part 1926, *Personal Protective and Life Saving Equipment*. An employee on the outside of the confined space shall be assigned to maintain communication with those working within it and to aid them in an emergency.

Where a welder must enter a confined space through a small opening, means shall be provided for quickly removing him in case of emergency. When safety belts and lifelines are used for this purpose they shall be attached to the welder's body so his body cannot be jammed in a small exit opening. An attendant with a pre-planned rescue procedure shall be stationed outside to observe the welder at all times and be capable of putting rescue operations into effect.

Welding, Cutting, or Heating of Metals of Toxic Significance

Welding, cutting or heating in any enclosed spaces involving the following metals shall be performed with adequate mechanical ventilation as described above:

- Zinc-bearing base or filler metals or metals coated with zinc-bearing materials,
- Lead base metals,
- Cadmium-bearing filler materials,
- Chromium-bearing metals or metals coated with chromium-bearing materials.

Welding, cutting or heating in any enclosed spaces involving the following metals shall be performed with adequate local exhaust ventilation as described above or employees shall be protected by air line respirators in accordance with the requirements of our Respiratory Protection Program:

- Metals containing lead, other than as an impurity, or metals coated with lead-bearing materials,
- Cadmium-bearing or cadmium-coated base metals,
- Metal coated with mercury-bearing metals.

Beryllium-containing base or filler metals. Because of its high toxicity, work involving beryllium shall be done with both local exhaust ventilation and air line respirators.

Employees performing operations in the open air shall be protected by filter-type respirators in accordance with the requirements of OSHA Subpart E. Employees performing operations on beryllium-containing base or filler metals shall be protected by air-line respirators in accordance with the requirements of OSHA Subpart E.

Other employees exposed to the same atmosphere as the welders or burners shall be protected in the same manner as the welder or burner.

Inert-Gas Metal-Arc Welding

Since the inert-gas metal-arc welding process involves the production of ultraviolet radiation of intensities of five to 30 times that produced during shielded metal-arc welding, the decomposition of chlorinated solvents by ultraviolet rays, and the liberation of toxic fumes and gases, employees shall not be permitted to engage in, or be exposed to the process until the following special precautions have been taken:

- The use of chlorinated solvents shall be kept at least 200 feet, unless shielded, from the exposed arc.
- Surfaces prepared with chlorinated solvents shall be thoroughly dry before welding is permitted on the surfaces.
- Employees in the area not protected from the arc by screening shall be protected by filter lenses meeting the requirements of Subpart E.
- When two or more welders are exposed to each other's arc, filter lens goggles of a suitable type shall be worn under welding helmets.
- Hand shields to protect the welder against flashes and radiant energy shall be used when either the helmet is lifted or the shield is removed.
- Welders and other employees who are exposed to radiation shall be suitably protected so that the skin is covered completely to prevent burns and other damage by ultraviolet rays.
- Welding helmets and hand shields shall be free of leaks and openings and highly reflective surfaces.
- When inert-gas metal-arc welding is being performed on stainless steel, adequate local exhaust ventilation as described above or air line respirators in accordance with the requirements of our Respiratory Protection Program shall be used to protect against dangerous concentrations of nitrogen dioxide.

General Welding, Cutting, and Heating

Welding, cutting or heating not involving conditions or toxic materials described above may normally be done without mechanical ventilation or respiratory protective equipment. Where an unsafe accumulation of contaminants exists because of unusual physical or atmospheric condition mechanical ventilation shall be provided.

Employees performing any type of welding, cutting or heating shall be protected by suitable eye protective equipment.

Welding, Cutting and Heating In Way Of Preservative Coatings

Before welding, cutting or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made by a competent person to determine its flammability. Preservative coatings shall be considered to be highly flammable when scrapings burn with extreme rapidity.

When coatings are determined to be highly flammable, they shall be stripped from the area to be heated to prevent ignition.

Protection against toxic preservative coatings:

- In enclosed spaces, all surfaces covered with toxic preservatives shall be stripped of all toxic coatings for a distance of at least four inches from the area of heat application, or the employees shall be protected by air line respirators meeting the requirements of OSHA Subpart E.
- In the open air, employees shall be protected by a respirator, in accordance with the requirements of OSHA Subpart E.

The preservative coatings shall be removed a sufficient distance from the area to be heated to ensure that the temperature of the unstripped metal will not be appreciably raised. Artificial cooling of the metal surrounding the heating area may be used to limit the size of the area required to be cleaned.

Welding Industrial Hygiene Exposures

Zinc

Zinc is used in large quantities in the manufacture of brass, galvanized metals and various other alloys. Inhalation of zinc oxide fumes can occur when welding or cutting on zinc-coated metals. Exposure to these fumes is known to cause metal fume fever. Symptoms of metal fume fever are very similar to those of common influenza. They include fever (rarely exceeding 102° F), chills, nausea, dryness of the throat, cough, fatigue and general weakness and aching of the head and body. The victim may sweat profusely for a few hours, after which the body temperature begins to return to normal. The symptoms of metal fume fever have rarely, if ever, lasted beyond 24 hours. The subject can then appear to be more susceptible to the onset of this condition on Mondays or on weekdays following a holiday than they are on other days.

Cadmium

Cadmium is used frequently as a rust-preventive coating on steel and also as an alloying element. Acute exposures to high concentrations of cadmium fumes can produce severe lung irritation, pulmonary edema, and in some cases, death. Long-term exposure to low levels of cadmium in air can result in emphysema (a disease affecting the ability of the lung to absorb oxygen) and can damage the kidneys. Cadmium is classified by OSHA, NIOSH and EPA as a potential human carcinogen.

Beryllium

Beryllium is sometimes used as an alloying element with copper and other base metals. Acute exposure to high concentrations of beryllium can result in chemical pneumonia. Long-term exposure can result in shortness of breath, chronic cough, and significant weight loss, accompanied by fatigue and general weakness.

Iron Oxide

Iron is the principal alloying element in steel manufacture. During the welding process, iron oxide fumes arise from both the base metal and the electrode. The primary acute effect of this exposure is irritation of nasal passages, throat and lungs. Although long-term exposure to iron oxide fumes may result in iron pigmentation of the lungs, most authorities agree that these iron deposits in the lung are not dangerous.

Mercury

Mercury compounds are used to coat metals to prevent rust or inhibit foliage growth (marine paints). Under the intense heat of the arc or gas flame, mercury vapors will be produced. Exposure to these vapors may produce stomach pain, diarrhea, kidney damage or respiratory failure. Long-term exposure may produce tremors, emotional instability and hearing damage.

Lead

The welding and cutting of lead-bearing alloys or metals whose surfaces have been painted with lead-based paint can generate lead oxide fumes. Inhalation and ingestion of lead oxide fumes and other lead compounds will cause lead poisoning. Symptoms include metallic taste in the mouth, loss of appetite,

nausea, abdominal cramps and insomnia. In time, anemia and general weakness, chiefly in the muscles of the wrists, develop. Lead adversely affects the brain, central nervous system, circulatory system, reproductive system, kidneys and muscles.

Fluorides

Fluoride compounds are found in the coatings of several types of fluxes used in welding. Exposure to these fluxes may irritate the eyes, nose, and throat. Repeated exposure to high concentrations of fluorides in air over a long period may cause pulmonary edema (fluid in the lungs) and bone damage. Exposure to fluoride dusts and fumes has also produced skin rashes.

Chlorinated Hydrocarbon Solvents

Various chlorinated hydrocarbons are used in degreasing or other cleaning operations. The vapors of these solvents are a concern in welding and cutting because the heat and ultraviolet radiation from the arc will decompose the vapors and form highly toxic and irritating phosgene gas (see Phosgene).

Phosgene

Phosgene is formed by decomposition of chlorinated hydrocarbon solvents by ultraviolet radiation. It reacts with moisture in the lungs to produce hydrogen chloride, which in turn destroys lung tissue. For this reason, any use of chlorinated solvents should be well away from welding operations or any operation in which ultraviolet radiation or intense heat is generated.

Carbon Monoxide

Carbon monoxide is a gas usually formed by the incomplete combustion of various fuels. Welding and cutting may produce significant amounts of carbon monoxide. In addition, welding operations that use carbon dioxide as the inert gas shield may produce hazardous concentrations of carbon monoxide in poorly ventilated areas. This is caused by a "breakdown" of shielding gas. Carbon monoxide is odorless, colorless and tasteless and cannot be readily detected by the senses. Common symptoms of overexposure include pounding of the heart, a dull headache, flashes before the eyes, dizziness, ringing in the ears, and nausea.

Ozone

Ozone (O₃) is produced by ultraviolet light from the welding arc. Ozone is produced in greater quantities by gas metal arc welding (GMAW or short-arc), gas tungsten arc welding (GTAW or heli-arc) and plasma arc cutting. Ozone is a highly active form of oxygen and can cause great irritation to all mucous membranes. Symptoms of ozone exposure include headache, chest pain and dryness of the upper respiratory tract. Excessive exposure can cause fluid in the lungs (pulmonary edema). Both nitrogen dioxide and ozone are thought to have long-term effects on the lungs.

Nitrogen Oxides

The ultraviolet light of the arc can produce nitrogen oxides (NO, NO₂) from the nitrogen (N) and oxygen (O₂) in the air. Nitrogen oxides are produced by gas metal arc welding (GMAW or short-arc), gas tungsten arc welding (GTAW or heli-arc) and plasma arc cutting. Even greater quantities are formed if the shielding gas contains nitrogen. Nitrogen dioxide (NO₂), one of the oxides formed, has the greatest health effect. This gas is irritating to the eyes, nose and throat but dangerous concentrations can be inhaled without any immediate discomfort. High concentrations can cause shortness of breath, chest pain and fluid in the lungs (pulmonary edema).

Ultraviolet Radiation

Ultraviolet radiation (UV) is generated by the electric arc in the welding process. Skin exposure to UV can result in severe burns, in many cases without prior warning. UV radiation can also damage the lens of the eye. Many arc welders are aware of the condition known as "arc-eye," a sensation of sand in the eyes. This condition is caused by excessive eye exposure to UV. Exposure to ultraviolet rays may also increase the skin effects of some industrial chemicals (i.e. coal tar and cresol compounds).

Infrared Radiation

Exposure to infrared radiation (IR), produced by the electric arc and other flame cutting equipment may heat the skin surface and the tissues immediately below the surface. Except for this effect, which can progress to thermal burns in some situations, infrared radiation is not dangerous to welders. Most welders protect themselves from IR (and UV) with a welder's helmet (or glasses) and protective clothing.

Intense Visible Light

Exposure of the human eye to intense visible light can produce adaptation, pupillary reflex, and shading of the eyes. Such actions are protective mechanisms to prevent excessive light from being focused on the retina. In the arc welding process, eye exposure to intense visible light is prevented for the most part by the welder's helmet. However, some individuals have sustained retinal damage due to careless "viewing" of the arc. At no time should the arc be observed without eye protection.

Source: OSHA Website: Gas, Welding and Cutting 29CFR 1926.350
(<http://www.osha.gov/doc/outreachtraining/htmlfiles/weldhlth.html>)

Welding, cutting and brazing

	Yes	No
1. Do you allow only authorized and trained personnel to use welding, cutting or brazing equipment?	()	()
2. Are compressed gas cylinders regularly examined for signs of defect, deep rusting or leakage?	()	()
3. Are cylinders kept away from sources of heat?	()	()
4. Are employees prohibited from using cylinders as rollers or supports?	()	()
5. Are empty cylinders appropriately marked, their valves closed and valve-protection caps placed on them?	()	()
6. Are signs posted that read “DANGER—NO SMOKING, MATCHES, OR OPEN LIGHTS,” or the equivalent?	()	()
7. Are cylinders, cylinder valves, couplings, regulators, hoses and apparatus kept free of oily or greasy substances?	()	()
8. Unless secured on special trucks, are regulators removed and valve-protection caps put in place before moving cylinders?	()	()
9. Do cylinders without fixed hand wheels have keys, handles or nonadjustable wrenches on stem valves when in service?	()	()
10. Are liquefied gases stored and shipped with the valve end up and with valve covers in place?	()	()
11. Before a regulator is removed, is the valve closed and gas then released from the regulator?	()	()
12. Is open circuit (no load) voltage of arc welding and cutting machines as low as possible and not more than the recommended limit?	()	()
13. Are electrodes removed from holders when not in use?	()	()
14. Are employees required to shut off the electric power to the welder when no one is using it?	()	()
15. Is suitable fire-extinguishing equipment available for immediate use?	()	()

16. Are welders forbidden to coil or loop welding electrode cable around their bodies? () ()
17. Is work and electrode lead cable frequently inspected for wear and damage and replaced when needed? () ()
18. Do the means for connecting cable lengths have adequate insulation? () ()
19. When the object to be welded cannot be moved and fire hazards cannot be removed, are shields used to confine heat, slag and sparks? () ()
20. Are fire watchers assigned when welding or cutting is performed in locations where a fire might develop? () ()
21. When welding is done on metal walls, are precautions taken to protect combustibles on the other side? () ()
22. Before hot work begins, are drums, barrels, tanks and other containers thoroughly cleaned and tested so that no substances remain that could explode, ignite or produce toxic vapors? () ()
23. Do eye-protection helmets, hand shields and goggles meet appropriate standards? () ()
24. Do employees use appropriate PPE when exposed to the hazards of welding, cutting or brazing operations? () ()
25. Do you check for adequate ventilation where welding or cutting is performed? () ()
26. When welders work in confined spaces is the atmosphere monitored and is there a means for their quick evacuation in an emergency? () ()
27. Are regulator-pressure adjusting screws released when welding or cutting is stopped for an extended period of time? () ()

Cranes and Rigging

This program applies to all operations that involve the use of cranes, hoists and/or rigging installed in or attached to buildings, and to mobile equipment. It applies to all employees and subcontractor personnel who use such devices and establishes crane-specific safety responsibilities. Each supervisor or safety coordinator shall ensure that operators are trained. Training records are maintained for at least the operators' duration of employment plus five years.

Crane-Specific Responsibilities

Management or Maintenance Coordinator

- Perform annual maintenance and inspection of all cranes and hoists that are not covered by an individual maintenance agreement.
- Conduct periodic and special load tests of cranes and hoists.
- Maintain written records of inspections and tests, and provide copies of all inspections and test results to supervisors.
- Inspect and load test cranes and hoists following modification or extensive repairs (e.g., a replaced cable or hook or structural modification.)
- Schedule a non-destructive test and inspection for crane and hoist hooks at the time of the periodic load test, and test and inspect before use new replacement hooks and other hooks suspected of having been overloaded. The evaluation, inspection and testing may include, but are not limited to visual, dye penetrant and magnetic particle techniques referenced in ASME B30.10 (Hooks, Inspection and Testing).
- Maintain all manuals for cranes and hoists in a central file for onsite reference.
- Conduct training for all Crane & Hoist Operators.
- Issue licenses to Crane and Hoist Operators. For fixed location equipment, a current list of designated operators may be maintained onsite.

Supervisors

- Ensure that employees under their supervision receive the required training and are certified and licensed to operate the cranes and hoists in their areas.
- Provide training for prospective crane and hoist operators.
- Evaluate crane and hoist trainees using the Safety Inspection Checklist for Overhead Crane and Hoist.
- Ensure hoisting equipment is inspected and tested monthly, rigging equipment is inspected annually and inspection results are documented onsite.

Crane and Hoist Operators

- Operate hoisting equipment safely.
- Conduct functional tests prior to using the equipment.
- Select and use rigging equipment appropriately.

- Have a valid operator's license on their person while operating cranes or hoists.
- Participate in a medical certification program, if required.

Safe Operating Requirements

All employees who use any crane or hoist shall have an operator's license. The manager or qualified crane operator issues licenses for authorized employees who have been specifically trained in crane and hoist operations and equipment safety. For fixed location equipment, a current list of designated operators may be maintained onsite.

Crane and Hoist Operators

To be qualified as a Crane and Hoist Operator, the candidate shall have received hands-on training from a qualified crane and hoist operator designated by the company management. The candidate will be issued a license upon approval by the manager or safety coordinator. Crane and Hoist Operators must renew their license every three years by satisfying the requirements described above.

Crane and Hoist Safety Design Requirements

Following are the design requirements for cranes and hoists and their components:

- The design of all commercial cranes and hoists shall comply with the requirements of ASME/ANSI B30 standards and Crane Manufacturer's Association of America standards (CMAA-70 and CMAA-74).
- All crane and hoist hooks shall have safety latches.
- Hooks shall not be painted or re-painted if the paint previously applied by the manufacturer is worn.
- Crane pendants shall have an electrical disconnect switch or button to open the mainline control circuit.
- Cranes and hoists shall have a main electrical disconnect switch. This switch shall be in a separate box that is labeled with lockout capability.
- Crane bridges and hoist monorails shall be labeled on both sides with the maximum capacity.
- Each hoist-hook block shall be labeled with the maximum hook capacity.
- Directional signs indicating N-W-S-E shall be displayed on the bridge underside, and a corresponding directional label shall be placed on the pendant.
- A device such as an upper-limit switch or slip clutch shall be installed on all building cranes and hoists. A lower-limit switch may be required when there is insufficient hoist rope on the drum to reach the lowest point.
- All cab and remotely operated bridge cranes shall have a motion alarm to signal bridge movement.
- All newly installed cranes and hoists, or those that have been extensively repaired or rebuilt structurally, shall be load tested at 125 percent capacity prior to being placed into service.
- If an overload device is installed, a load test to the adjusted setting is required.
- Personnel baskets and platforms suspended from any crane shall be designed in accordance with the specifications in OSHA 29 CFR 1926.550(g).
- All cranes used for personnel lifting shall have two anti-blocking devices installed and operational.

- Cranes taken out of service for extended periods shall be clearly marked “Out of Service” with signed and dated labels. Cranes that are out of service shall have the power physically disconnected or locked out.

General Safety Rules

Operators shall comply with the following rules while operating the cranes and hoists:

- Do not engage in any practice that will divert your attention while operating the crane.
- Respond to signals only from the person who is directing the lift, or an appointed signal person.
- Obey a stop signal at all times.
- Do not move a load over people. Do not work under a suspended load, unless the load is supported by blocks, jacks or a solid footing that will safely support the entire weight. Have a crane or hoist operator remain at the controls or lock open and tag the main electrical disconnect switch.
- ☐ Ensure the rated load capacity of a crane's bridge, individual hoist or any sling or fitting is not exceeded. Know the weight of the object being lifted or use a dynamometer or load cell to determine the weight.
- Check that all controls are in the OFF position before closing the mainline disconnect switch.
- If spring-loaded reels are provided to lift pendants off the work area, ease the pendant up into the stop to prevent damaging the wire.
- Avoid side pulls and/or load swinging. These can cause the hoist rope to slip out of the drum groove, damaging the rope or destabilizing the crane or hoist.
- To prevent shock loading, avoid sudden stops or starts. Shock loading can occur when a suspended load is accelerated or decelerated, and can overload the crane or hoist. When completing an upward or downward motion, ease the load slowly to a stop.

Crane & Hoist Operation Rules

Pre-operational Test

At the start of each work shift, operators shall do the following steps before making lifts with any crane or hoist:

1. Test the upper-limit switch. Slowly raise the unloaded hook block until the limit switch trips.
2. Visually inspect the hook, load lines, trolley and bridge as much as possible from the operator's station; in most instances, this will be the floor of the building.
3. If provided, test the lower-limit switch.
4. Test all direction and speed controls for both bridge and trolley travel.
5. Test all bridge and trolley limit switches, where provided, if operation will bring the equipment in close proximity to the limit switches.
6. Test the pendant emergency stop.
7. Test the hoist brake to verify there is no drift without a load.
8. If provided, test the bridge movement alarm.
9. Lock out and tag for repair any crane or hoist that fails any of the above tests. Do not return to service until necessary maintenance is completed.

Moving a Load

- Center the hook over the load to keep the cables from slipping out of the drum grooves and overlapping, and to prevent the load from swinging when it is lifted. Inspect the drum to verify the cable is in the grooves.

- Use a tag line when loads must traverse long distances or must otherwise be controlled. Manila rope may be used for tag lines.
- Plan and check the travel path to avoid personnel and obstructions.
- Lift the load only high enough to clear the tallest obstruction in the travel path.
- Start and stop slowly.
- Land the load when the move is finished. Choose a safe landing.
- Never leave suspended loads unattended. In an emergency where the crane or hoist has become inoperative, if a load must be left suspended, barricade and post signs in the surrounding area, under the load, and on all four sides. Lock open and tag the crane or hoist's main electrical disconnect switch.

Parking a Crane or Hoist

- Remove all slings and accessories from the hook. Return the rigging device to the designated storage racks.
- Raise the hook at least seven feet (2.1 m) above the floor.
- Store the pendant away from aisles and work areas, or raise it at least seven feet (2.1 m) above the floor.
- Place the emergency stop switch (or push button) in the OFF position.

General Rigging Safety Requirements

Use only rigging equipment that is in good condition. All rigging equipment shall be inspected at least annually. Defective equipment shall be removed from service and destroyed to prevent inadvertent use. The load capacity limits shall be stamped or affixed to all rigging components. Prudent practice requires a minimum safety factor of five to be maintained for wire rope slings.

The following types of slings shall be rejected or destroyed:

Nylon slings with:

- Abnormal wear
- Torn stitching
- Broken or cut fibers
- Discoloration or deterioration

Wire-rope slings with:

- Kinking, crushing, bird-caging, or other distortions
- Evidence of heat damage

Cracks, deformation or worn end attachments

- Six randomly broken wires in a single rope lay
- Three broken wires in one strand of rope
- Hooks opened more than 15% at the throat
- Hooks twisted sideways more than 10 degrees from the plane of the unbent hook

Alloy steel chain slings with:

- Cracked, bent, or elongated links or components
- Cracked hooks

Shackles, eye bolts, turnbuckles or other components that are damaged or deformed.

Rigging a Load

Operators shall do the following when rigging a load:

- Determine the weight of the load. Never guess.
- Determine the proper size for slings and components.
- Do not use manila rope for rigging.
- Make sure that shackle pins and shouldered eye bolts are installed in accordance with the manufacturer's recommendations.
- Make sure ordinary (shoulderless) eye bolts are threaded in at least 1.5 times the bolt diameter (Grade 8 preferred).
- Use safety hoist rings (swivel eyes) as a preferred substitute for eye bolts wherever possible.
- Pad sharp edges to protect slings. Remember that machinery foundations or angle-iron edges may not feel sharp to the touch but will cut into rigging when under several tons of load. Wood, tire rubber, or other pliable materials may be suitable for padding.
- Do not use slings, eye bolts, shackles or hooks that have been cut, welded, brazed or otherwise altered.
- Install wire-rope clips with the base only on the live end and the U-bolt only on the dead end. Follow the manufacturer's recommendations for the spacing for each specific wire size.
- Determine the center of gravity and balance the load before moving it.
- Initially lift the load only a few inches to test the rigging and balance.

Crane Overloading

Cranes or hoists shall not be loaded beyond their rated capacity for normal operations. Any crane or hoist suspected of having been overloaded shall be removed from service by locking open and tagging the main disconnect switch. Additionally, overloaded cranes shall be inspected, repaired, load tested and approved for use before being returned to service.

Working at Heights on Cranes or Hoists

Anyone conducting maintenance or repair on cranes or hoists at heights greater than six feet (1.8 m) shall use fall protection. Fall protection should also be considered for heights less than six feet (1.8 m). Fall protection includes safety harnesses that are fitted with a lifeline and securely attached to a structural member of the crane, building or properly secured safety nets. Belts are not permitted for fall protection. Use of a crane as a work platform should only be considered when conventional means of reaching an elevated worksite are hazardous or not possible. Employees shall not ride a moving bridge crane without formal approval from the manager or safety coordinator, which shall specify the following as a minimum:

- Personnel shall not board any bridge crane unless the main disconnect switch is locked and tagged open.
- Personnel shall not use bridge cranes without a permanent platform (catwalk) as work platforms.
- Bridge catwalks shall have a permanent ladder access.
- Personnel shall ride seated on the floor of a permanent platform with approved safety handrails, wear safety harnesses attached to designated anchors and be in clear view of the crane operator at all times.
- Operators shall lock and tag open the main (or power) disconnect switch when the crane is parked.

Hand Signals

Signals to the operator shall be in accordance with standard hand signals unless voice communications equipment (telephone, radio or equivalent) is used. Signals shall be discernible or audible at all times. Some special operations may require addition to or modification of the basic signals. For all such cases, these special signals shall be agreed upon and thoroughly understood by both the person giving the signals and the operator, and shall not be in conflict with the standard signals.

Inspection, Maintenance, and Testing

All tests and inspections shall be conducted in accordance with the manufacturer's recommendations.

Monthly In-House Tests and Inspections

- All in-service cranes and hoists shall be inspected monthly and the results documented.
- Manager or safety coordinator shall designate an individual to conduct and document in-house crane, hoist and rigging inspections.
- Defective cranes and hoists shall be locked and tagged "out of service" until all defects are corrected. The inspector shall initiate corrective action by notifying the safety officer or their supervisor.

Required Preventive Maintenance Inspections

The safety officer or their supervisor shall schedule, supervise or perform annual preventive maintenance (PM) inspections of all cranes and hoists. Annual PM inspections shall be conducted by a designated crane inspector for frequent use cranes, or at least every three years for infrequently used cranes.

The annual PM inspection shall cover at least:

- Hoisting and lowering mechanisms
- Trolley travel or monorail travel
- Bridge travel
- Limit switches and locking and safety devices
- Structural members
- Bolts or rivets
- Sheaves and drums
- Parts such as pins, bearings, shafts, gears, rollers, locking devices, and clamping devices
- Brake system parts, linings, pawls, and ratchets
- Load, wind, and other indicators over their full range
- Gasoline, diesel, electric, or other power plants
- Chain-drive sprockets
- Crane and hoist hooks
- Electrical apparatus such as controller contractors, limit switches and push button stations.
 - Wire rope
 - Hoist chains

Load Testing

- Newly installed cranes and hoists shall be load tested at 125 percent of the rated capacity by designated personnel.

- Slings shall have appropriate test data when purchased. It is the responsibility of the purchaser to ensure the appropriate test data are obtained and maintained.
- Re-rated cranes and hoists shall be load tested to 125 percent of the new capacity if the new rating is greater than the previous rated capacity.
- Fixed cranes or hoists that have had major modifications or repair shall be load tested to 125 percent of the rated capacity.
- Cranes and hoists that have been overloaded shall be inspected prior to being returned to service.
- Personnel platforms, baskets, and rigging suspended from a crane or hoist hook shall be load tested initially, then re-tested annually thereafter, or at each new job site.
- All mobile cranes and hoists shall be load tested at least annually.

Records

Manager or safety coordinator shall maintain records for all cranes, hoist and rigging equipment in the affected workplace.

Non-standard Lifting Devices

Non-standard devices and equipment for lifting personnel and/or materials shall be receive operational and preventive maintenance inspections, as required for cranes and hoists. Each such device shall be evaluated for suitability on a case-by-case basis, based on documented engineering design and performance data. The manager or safety coordinator shall justify the presence and use of such devices.

Safety Inspection Check List for Overhead Crane and Hoist

A safety inspection check is scheduled every two months by authorized crane inspection personnel. In addition, any other employees are to report any unsafe condition of crane or hoist.

Items to be checked are as follows:

1. Controls cords-Check for proper ground, excessive wear or exposed wires. Visual check daily by foreman and/or leadman with a caliper each month.
2. Lifting cable-Excessive wear indicated by broken strands or kinks. Visual check daily. Measure diameter of wire rope monthly.
3. Hook-Cracks or excessive wear, progressive straightening indicating overload and broken safety latch.
4. Brake-Set to securely hold maximum load position. Brakes must be tested at the beginning of each shift.
5. Sling/Chain-Broken stitching, frayed strands in belt, excessive wear or cracks on metal hook point, stretched links, burned wire or mesh.
6. Control Switch-Proper switch identification. Equipment responds properly and quickly.
7. Keep direction control buttons (up, down, forward, reverse, right traverse, left traverse) legible and free of any material such as dry paint so button does not stick and cause crane to travel.
8. When working on crane, disconnect electrical power, block crane rail both sides and place warning sign on hoist control pendant.

Nylon Lift Slings

- Nylon lift slings are provided for use with overhead hoist and portable cranes for lifting, lowering and carrying bulky loads.
- Woven nylon fabric is flexible, conforms to irregular shapes and can be used as vertical, basket or choker slings.
- Slings are tagged for safe load limits. Do not overload. Lift slings are constructed of thick high-strength woven nylon with red dyed nylon fiber inner core which becomes exposed if sling is cut or severely worn. Appearance of red fiber warns that hazardous sling conditions exist and sling must be scrapped.

Chain Slings

How to select the proper chain sling:

1. Determine the maximum weight of load.
2. Determine the type of sling required.
3. Determine the size of the body chain for the sling.
4. Select the matching attachments required.
5. Determine the reach required to give the desired angle. The reach is measured from the upper bearing surface of the master link to the bearing surface of the lower attachment.

Use the work load limits chart. If in doubt as to which chain sling to use, ask your supervisor. The working load ratings of the chain slings in use are to specifications in ANSI 830.9 and are so designed by markings on a tag attached to the chain sling.

Working load limits contain no implication of what load the chain will withstand if chain is heated, nicked, stretched or otherwise tampered with.

Inspection of Chain Sling

- It is important to inspect chain slings regularly and to keep a record of individual inspection.
- Before inspecting, clean the chains so that marks, nicks, wear and other defects can be seen.
- Each link should be inspected for the following danger signs:
 - Twists or bends
 - Nicks or gouges
 - Excessive wear at bearing points
 - Stretch
 - Distorted or damaged master links, couplings, links, or attachments, especially spread in throat opening of hooks.
- Each link or attachment that has any defect listed above should be marked with paint to plainly indicate rejection and elimination from service until properly repaired.
- Determine wear allowance by measuring cross section at link ends. If worn to less than the minimum thickness allowable, the chain should be removed from service.
- Store chains on an A-frame or chain rack in a clean, dry place.

Fall Protection

This fall protection plan addresses the use of conventional fall protection, as well as identifies specific activities that require non-conventional means of fall protection. All employees exposed to potential falls from heights will be trained to minimize the exposures. Fall protection equipment will be provided and its use required by all employees. Supervisors will be responsible for implementation of a fall protection plan for their jobsite.

Responsibilities

Management/Owner

Responsible for ensuring all employees understand and adhere to the procedures of the Fall Protection Plan.

Supervisor

Responsible for implementing this Fall Protection Plan. Continual observational safety checks of work operations and the enforcement of the safety policy and procedures shall be regularly enforced. The supervisor is responsible for correcting any unsafe practices or conditions immediately.

Employee

Responsible for learning and adhering to these procedures. It is also the responsibility of the employee to bring to management's attention any unsafe or hazardous conditions or practices that may cause injury to either themselves or any other employees.

Hazard Identification

The supervisor will be responsible for identifying fall hazards. The supervisor will evaluate each situation or work procedure where employees may be exposed to a fall of six feet or more. The supervisor will be responsible for developing a plan to eliminate the exposures, if possible, or to select the appropriate fall protection systems and/or equipment.

Hazard Control

Engineering Controls

- Personal fall protection
- Guard rail systems
- Positioning devices
- Warning line systems
- Floor opening covers

Administrative Controls

- Controlled access zones
- Employee training
- Audits

- Inspections
- Supervision
- Signs

Fall Protection Required

The following are examples of situations where fall protection is necessary. This listing is by no means complete, and there are many other situations where a fall of 6 feet or more is possible. It should be noted that ladders and scaffolding are not included in this list because they are covered by other OSHA standards and other requirements of our safety program.

Wall Openings

Employees working on, at, above or near wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is six feet (1.8 meters) or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches (1.0 meter) above the walking/working surface must be protected from falling by the use of a guardrail system, a safety net system or a personal fall arrest system.

Floor Openings/Holes

Personal fall arrest systems, covers or guardrail systems shall be erected around holes (including skylights) that are more than six feet (1.8 meters) above lower levels.

Leading Edges

Employees who is constructing a leading edge 6 feet (1.8 meters) or more above lower levels shall be protected by guardrail systems, safety net systems, or personal fall arrest systems.

Excavations

Employees at the edge of an excavation six feet (1.8 meters) or more deep shall be protected from falling by guardrail systems, fences, barricades or covers. Where walkways are provided to permit employees to cross over excavations, guardrails are required if it is six feet (1.8 meters) or more above the excavation.

Formwork and Reinforcing Steel

For employees, while moving vertically and/or horizontally on the vertical face of rebar assemblies built in place, fall protection is not required. OSHA considers the multiple hand holds and foot holds on rebar assemblies provide similar protection as a fixed ladder. Consequently, no fall protection is necessary while moving point to point for heights below 24 feet (7.3 meters). An employee must be provided with fall protection when climbing or otherwise moving at a height more than 24 feet (7.3 meters), the same as for fixed ladders.

Hoist Areas

Employees in a hoist area shall be protected from falling six feet (1.8 meters) or more by guardrail systems or personal fall arrest systems. If guardrail systems (or chain gate or guardrail) or portions thereof must be removed to facilitate hoisting operations, such as during the landing of materials, and an employee must lean through the access opening or out over the edge of the access opening to receive or guide equipment and materials, that employee must be protected by a personal fall arrest system.

Overhand Bricklaying and Related Work

Employees performing overhand bricklaying and related work six feet (1.8 meters) or more above lower levels shall be protected by guardrail systems, safety net systems or personal fall arrest systems, or shall work in a controlled access zone. All employees reaching more than 10 inches (25 cm) below the level of a walking/working surface shall be protected by a guardrail system, safety net system or personal fall arrest system.

Precast Concrete Erection and Residential Construction

Employees who are six feet (1.8 meters) or more above lower levels while erecting precast concrete members and related operations such as grouting and employees engaged in residential construction shall be protected by guardrail systems, safety net systems or personal fall arrest systems.

Ramps, Runways, and Other Walkways

Employees using ramps, runways, and other walkways shall be protected from falling six feet (1.8 meters) or more by guardrail systems.

Low Slope Roofs

Employees engaged in roofing activities on low-slope roofs with unprotected sides and edges six feet (1.8 meters) or more above lower levels shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems or a combination of a warning line system and guardrail system, warning line system and safety net system, warning line system and personal fall arrest system or warning line system and safety monitoring system. On roofs 50 feet (15.24 meters) or less in width, the use of a safety monitoring system without a warning line system is permitted.

Steep Roofs

Employees on a steep roof with unprotected sides and edges six feet (1.8 meters) or more above lower levels shall be protected by guardrail systems with toeboards, safety net systems or personal fall arrest systems.

Controlled Access Zones

A controlled access zone is a work area designated and clearly marked in which certain types of work (such as overhand bricklaying) may take place without the use of conventional fall protection systems, guardrail, personal arrest or safety net.

Controlled access zones are used to keep out employees other than those authorized to enter work areas from which guardrails have been removed. Where there are no guardrails, masons are the only workers allowed in controlled access zones.

Controlled access zones, when created to limit entrance to areas where leading edge work and other operations are taking place, must be defined by a control line or by any other means that restrict access. Control lines shall consist of ropes, wires, tapes or equivalent materials, and supporting stanchions, and each must be:

- Flagged or otherwise clearly marked at not more than six-foot (1.8 meters) intervals with high-visibility material

- Rigged and supported in such a way that the lowest point (including sag) is not less than 39 inches (1 meter) from the walking/working surface and the highest point is not more than 45 inches (1.3 meters) nor more than 50 inches (1.3 meters) when overhand bricklaying operations are being performed from the walking/working surface.
- Strong enough to sustain stress of not less than 200 pounds (0.88 kilonewtons). Control lines shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge. Control lines also must be connected on each side to a guardrail system or wall. When control lines are used, they shall be erected not less than six feet (1.8 meters) and not more than 25 feet (7.6 meters) from the unprotected or leading edge, except when precast concrete members are being erected. In the latter case, the control line is to be erected not less than six feet (1.8 meters) and not more than 60 feet (18 meters) or half the length of the member being erected, whichever is less, from the leading edge.

Controlled access zones, when used to determine access to areas where overhand bricklaying and related work are taking place, are to be defined by a control line erected not less than 10 feet (three meters) and not more than 15 feet (4.6 meters) from the working edge. Additional control lines must be erected at each end to enclose the controlled access zone. Only employees engaged in overhand bricklaying or related work are permitted in the controlled access zones.

On floors and roofs where guardrail systems are not in place prior to the beginning of overhand bricklaying operations, controlled access zones will be enlarged as necessary to enclose all points of access, material handling areas and storage areas.

On floors and roofs where guardrail systems are in place, but need to be removed to allow overhand bricklaying work or leading edge work to take place, only that portion of the guardrail necessary to accomplish that day's work shall be removed.

Fall Protection Systems

When there is a potential fall of six feet or more, we will utilize one or more of the following means of providing protection:

Guardrail Systems

Guardrail systems must meet the following criteria:

- Toprails and midrails of guardrail systems must be at least one-quarter inch (0.6 centimeters) diameter or thickness to prevent cuts and lacerations.
- If wire rope is used for toprails, it must be flagged at not more six feet intervals (1.8 meters) with high-visibility material.
- Steel and plastic banding cannot be used as toprails or midrails.
- Manila, plastic or synthetic rope used for toprails or midrails must be inspected as frequently as necessary to ensure strength and stability.
- The top edge height of toprails, or (equivalent) guardrails must be 42 inches (1.1 meters) plus or minus three inches (eight centimeters), above the walking/working level.
- When employees are using stilts, the top edge height of the top rail, or equivalent member, must be increased an amount equal to the height of the stilts.
- Screens, midrails, mesh, intermediate vertical members or equivalent intermediate structural members must be installed between the top edge of the guardrail system and the

walking/working surface when there are no walls or parapet walls at least 21 inches (53 centimeters) high.

- When midrails are used, they must be installed to a height midway between the top edge of the guardrail system and the walking/working level.
- When screens and mesh are used, they must extend from the top rail to the walking/working level and along the entire opening between top rail supports. Intermediate members, such as balusters, when used between posts, shall not be more than 19 inches (48 centimeters) apart.
- Other structural members, such as additional midrails and architectural panels, shall be installed so that there are no openings in the guardrail system more than 19 inches (48 centimeters).
- The guardrail system must be capable of withstanding a force of at least 200 pounds (890 newtons) applied within two inches of the top edge in any outward or downward direction. When the 200 pound (890 newtons) test is applied in a downward direction, the top edge of the guardrail must not deflect to a height less than 39 inches (one meter) above the walking/working level.
- Midrails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members shall be capable of withstanding a force of at least 150 pounds (667 newtons) applied in any downward or outward direction at any point along the midrail or other member.
- Guardrail systems shall be surfaced to protect employees from punctures or lacerations and to prevent clothing from snagging.
- The ends of top rails and midrails must not overhang terminal posts, except where such overhang does not constitute a projection hazard.
- When guardrail systems are used at hoisting areas, a chain, gate or removable guardrail section must be placed across the access opening between guardrail sections when hoisting operations are not taking place.
- At holes, guardrail systems must be set up on all unprotected sides or edges. When holes are used for the passage of materials, the hole shall have not more than two sides with removable guardrail sections. When the hole is not in use, it must be covered or provided with guardrails along all unprotected sides or edges.
- If guardrail systems are used around holes that are used as access points (such as ladderways), gates must be used or the point of access must be offset to prevent accidental walking into the hole.
- If guardrails are used at unprotected sides or edges of ramps and runways, they must be erected on each unprotected side or edge.

Personal Fall Arrest Systems

These consist of an anchorage, connectors, and a body belt or body harness and may include a deceleration device, lifeline or suitable combinations. If a personal fall arrest system is used for fall protection, it must do the following:

- Limit maximum arresting force on an employee to 900 pounds (four kilonewtons) when used with a body belt
- Limit maximum arresting force on an employee to 1,800 pounds (eight kilonewtons) when used with a body harness
- Be rigged so that an employee can neither free fall more than six feet (1.8 meters) nor contact any lower level
- Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet (1.07 meters)

- Have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of six feet (1.8 meters) or the free fall distance permitted by the system, whichever is less.

The use of body belts for fall arrest is prohibited and a full body harness is required.

Personal fall arrest systems must be inspected prior to each use for wear damage and other deterioration. Document the inspection using the Safety Harness Inspection Report. Defective components must be removed from service.

Positioning Device Systems

Body harness systems are to be set up so that an employee can free fall no farther than two feet (0.6 meters). They shall be secured to an anchorage capable of supporting a least twice the potential impact load of an employee's fall or 3,000 pounds (13.3 kilonewtons), whichever is greater.

Safety Monitoring Systems

When no other fall protection has been implemented, a safety monitoring system shall be implemented. (Competent person) will monitor the safety of employees and the supervisor shall ensure that the safety monitor:

- Is competent in the recognition of fall hazards
- Is capable of warning employees of fall hazard dangers and in detecting unsafe work practices
- Is operating on the same walking/working surfaces of the employees and can see them
- Is close enough to work operations to communicate orally with employees and has no other duties to distract from the monitoring function.

Mechanical equipment shall not be used or stored in areas where safety monitoring systems are being used to monitor employees engaged in roofing operations on low-sloped roofs.

No employee, other than one engaged in roofing work (on low-sloped roofs) or one covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system.

All employees in a controlled access zone shall be instructed to promptly comply with fall hazard warnings issued by safety monitors.

Safety Net Systems

Safety nets must be installed as close as possible under the walking/working surface on which employees are working and never more than 30 feet (9.1 meters) below such levels. Defective nets shall not be used. Safety nets shall be inspected at least once a week for wear, damage and other deterioration. Safety nets shall be installed with sufficient clearance underneath to prevent contact with the surface or structure below.

Items that have fallen into safety nets including, but not restricted to, materials, scrap, equipment and tools must be removed as soon as possible and at least before the next work shift.

Warning Line Systems

Warning line systems consist of ropes, wires, or chains and supporting stanchions and are set up as follows:

- Flagged at not more than six-foot (1.8 meters) intervals with high-visibility material
- Rigged and supported so the lowest point including sag is no less than 34 inches (0.9 meters) from the walking/working surface and its highest point is no more than 39 inches (one meter) from the walking/working surface
- Stanchions, after being rigged with warning lines, shall be capable of resisting, without tipping over, a force of at least 16 pounds (71 newtons) applied horizontally against the stanchion, 30 inches (0.8 meters) above the walking/working surface, perpendicular to the warning line and in the direction of the floor, roof or platform edge.
- The rope, wire or chain shall have a minimum tensile strength of 500 pounds (2.22 kilonewtons) and after being attached to the stanchions, must support without breaking the load applied to the stanchions as prescribed above shall be attached to each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in the adjacent section before the stanchion tips over.

Warning lines shall be erected around all sides of roof work areas. When mechanical equipment is being used, the warning line shall be erected not less than six feet (1.8 meters) from the roof edge parallel to the direction of mechanical equipment operation, and not less than 10 feet (three meters) from the roof edge perpendicular to the direction of mechanical equipment operation. When mechanical equipment is not being used, the warning line must be erected not less than six feet (1.8 meters) from the roof edge.

Covers

Covers located in roadways and vehicular aisles must be able to support at least twice the maximum axle load of the largest vehicle to which the cover might be subjected. All other covers must be able to support at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time. To prevent accidental displacement resulting from wind, equipment or employee activities, all covers must be secured. All covers shall be color-coded or bear the markings "HOLE" or "COVER."

Protection From Falling Objects

When guardrail systems are used to prevent materials from falling from one level to another, any openings must be small enough to prevent passage of potential falling objects. No materials or equipment except masonry and mortar shall be stored within four feet (1.2 meters) of working edges. Excess mortar, broken or scattered masonry units, and all other materials and debris shall be kept clear of the working area by removal at regular intervals.

During roofing work, materials and equipment shall not be stored within six feet (1.8 meters) of a roof edge unless guardrails are erected at the edge, and materials piled, grouped, or stacked near a roof edge must be stable and self-supporting.

Training

Employees will be trained in the following areas:

- Fall hazards in the work area
- Procedures for erecting, maintaining, disassembling and inspecting fall protection systems

- The use and operation of controlled access zones and guardrail, personal fall arrest, safety net, warning line and safety monitoring systems
- The employee's roll in the safety monitoring system
- Limitations of mechanical equipment used during the performance of roofing work on low-sloped roofs
- Procedures for equipment and materials handling and storage and the erection of overhead protection
- Employees role in fall protection plans.

Safety Harness Inspection Report

<i>Inspector's Name</i>	<i>Harness Make/Model</i>	<i>Mfg.'s Serial Number</i>	<i>Harness Webbing or Leather</i>	<i>All Stitching</i>	<i>Rivets and Eyelets</i>	<i>D-Rings, Buckles and Tongue</i>	<i>Body Pad (if applicable)</i>	<i>Lanyards</i>	<i>Safety Latch / Hook</i>	<i>Certification or Data Tag</i>

Jobsite
Date
0 = Yes - OK
X = No - Replace

Forward to Safety Director at _____

Injury Management

Loss Analysis

All accidents and injuries will be investigated. Supervisors are responsible for the primary investigation of all accidents and injuries occurring in their departments. The standard Accident Investigation form will be used for this purpose. The Safety Director and/or upper management will review all investigations. Recommendations will be forwarded to the appropriate departments for corrective action. Accidents and injuries will be analyzed by the company CEO/Owner to identify trends and specific areas to address in the overall accident prevention program. The accidents will be analyzed annually to audit the effectiveness of the company safety programs.

Accident Analysis

Statistical analysis will include the calculation of the Incidence Rate, Severity Rate and the Frequency Rate. Other statistics include the number and type of accidents occurring and the dollar costs to the company. Dollar costs will not only include direct costs like medical and lost time wages paid, but will also include the indirect costs associated with accidents like replacing the injured worker, material damage, possible fines etc.

Following are the formulas to be used in calculating the accident statistics:

Incidence Rate

$N/EH \times 200,000$

N = No. of Injuries and/or Illnesses or Lost Workdays

EH = Total hours worked by all employees during calendar year

200,000 = base for 100 Full Time Equivalent employees (40 hours/ week, 50 weeks/year)

Frequency Rate

Definition: The disabling injury Frequency Rate relates the injuries to the hours worked during the period and expresses them in terms of a million-hour unit by use of the following formula:

$\text{No. of disabling injuries} \times 1,000,000 / \text{Employee hours of exposure}$

Severity Rate

Definition: The disabling injury Severity Rate relates the days charged to the hours worked during the period and expresses them in terms of a million-hour unit by use of the following formula:

$\text{No. of days charged} \times 1,000,000 / \text{Employee hours of exposure}$

Sources of information on accidents and injuries used to compare our type of business to others with similar exposures can be found in the following documents, guides and organizations:

The U. S. Bureau of Labor and Statistics

The National Safety Council

Injury Reporting Procedures

It is not only the law to report accidents to the State and insurance company, but a performance requirement for all employees. All accidents shall be reported and investigated for corrective actions by the injured employee's supervisor. The employees and witnesses must fully cooperate in the investigation.

How to handle an employee injury:

- Secure the accident area so other employees are not at risk before attending to injured employee.
- Direct another employee to call for medical assistance.
- Provide or obtain immediate medical attention for the injured employee. This can be with a trained first aid/CPR provider and/or emergency services.
- Contact the employee's supervisor.
- If needed, the supervisor or his designee should transport the injured employee to the company's designated medical facility to receive appropriate medical attention.
- The supervisor should then notify Human Resources of the accident and file a workers compensation claim.
- Human Resources will report the claim to the insurance company.
- A post-accident drug and/or alcohol test will be conducted at the medical provider in accordance with the company's Drug-Free Workplace Policy.
- The supervisor will secure the accident site after the employee is removed. This might include barricading and turning of electrical equipment.
- If the root cause of the accident is easily corrected and identified, it should be corrected immediately. An accident investigation might be required to gather more information to determine the cause of the accident. The accident investigation should begin shortly after the employee has received medical attention.
- All witnesses to the accident should speak with the supervisor and cooperate fully in the accident investigation.

Incident Investigation

When to Conduct the Investigation

A supervisor conducts incident investigations with the primary focus to understand why the incident occurred and provide corrective actions. If possible, the investigation should occur when the facts are fresh in the memories of witnesses and employees involved in the incident. This should occur within 24 hours after the incident. If the employee is hurt or distressed about the event, the employee interview should be conducted when the employee is calm or medically fit. The investigation should describe the events that created the incident.

How to Conduct the Investigation

- Secure and document the scene.
 - Remove employees who might still be at risk for a similar incident.
 - Secure the scene with cones or a barricade.
 - Document the site by writing down observed conditions.
 - Photograph the site if needed for the investigation.
 - Document the names of witnesses to the incident for interview.
 - Identify the facts. Don't assume anything, opinionate or blame anyone.
- Use the four P's to investigate and document:
 - People—the eyewitness or the ear (hearing) witness
 - Parts—use words such as debris, guards and equipment
 - Position—exact location of the people and parts, providing measurements
 - Paper—records, codes, standards and blueprints provide strong, concrete data

Investigation Interview Steps

- Eliminate distractions and allow the proper timeframe for the interview.
- Conduct the interview at the incident site.
- Interview witnesses separately to get a full detail of their recollection of events without the influence from other witnesses.
- Listen. During a typical interview the interviewer should be talking 25 percent of the time, and the interviewee should be speaking 75 percent.
- Ask open-ended questions. Show the importance of the employee and investigation. Ask for suggestions to solve the problem.

Complete the Incident Investigation Forms

The Incident Investigation Report should be provided with as much detail as possible. All events leading up to the incident are important in determining the main cause of the incident. Environment, behavior and procedures might also contribute to the incident and should be reviewed.

Answer the following:

- What machinery, equipment or conditions existed at the time of the incident?
- Who was present?

- What were the actions that led to the incident?
- What did the employee and witness statements reveal about conditions or events?
- What was the critical incident-producing event?

Corrective Action

Providing corrective action is critical to any incident investigation and will help prevent future incidents. The first method is to eliminate or change the condition or operation that lead to the incident event. If there is a safer method of performing the operation, it should be implemented. The second corrective action is to guard the employee from having contact with the operation. Devices preventing physical contact with the human body represent the majority of machine guards. Use of personal protective equipment should be the last resort when the hazard can't be controlled by engineering or mechanical means. Personal protective equipment (PPE) effectiveness is not consistent unless the supervisor strictly enforces the use and training. The supervisor must instruct the employee in the use of the PPE required for that job. Warning the employee to "be careful" is not a corrective action and cannot be called training and education. Whatever corrective action taken, it should be documented on the Corrective Action Form.

Incident Investigation Report

Employee Name	Date of Incident	Time of Incident <input type="checkbox"/> A.M. <input type="checkbox"/> P.M.	Date Reported
Department	Job Title	Hire Date	
Job Performed	Experience Performing Job		
Location of Incident	Person Incident Was Reported To		
Extent of Injury <input type="checkbox"/> No Injury <input type="checkbox"/> First Aid Only <input type="checkbox"/> Taken to Clinic <input type="checkbox"/> Taken to ER <input type="checkbox"/> Fatality	Treating Medical Facility		
Description of Incident			
Any Witnesses? <input type="checkbox"/> Yes <input type="checkbox"/> No	Name	Name	Name
Were there others injured? <input type="checkbox"/> Yes <input type="checkbox"/> No	Name	Name	Name

Cause of Incident

Contributing Incident Factors

Physical <input type="checkbox"/> Poor Housekeeping <input type="checkbox"/> Poor or no equipment guarding <input type="checkbox"/> Improper illumination <input type="checkbox"/> Improper ventilation <input type="checkbox"/> Equipment failure <input type="checkbox"/> Unsafe apparel <input type="checkbox"/> Medical condition, e.g. stroke, cardiac arrest <input type="checkbox"/> Surrounding subcontractor at fault <input type="checkbox"/> Conditions e.g. wet, _____ <input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____	Behavioral <input type="checkbox"/> Not using required PPE <input type="checkbox"/> Performing duties outside of scope of job <input type="checkbox"/> Failure to obey supervisor's instructions <input type="checkbox"/> Failure to obey job procedures <input type="checkbox"/> Suspected intoxication <input type="checkbox"/> Employee was engaged in horseplay <input type="checkbox"/> Employee was unsuited for the job <input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____	Procedural <input type="checkbox"/> Asked to performing job without training <input type="checkbox"/> Operating equipment without training <input type="checkbox"/> Poor enforcement of PPE use <input type="checkbox"/> Needed equipment not supplied <input type="checkbox"/> Failure to inspect equipment <input type="checkbox"/> Failure to correct poor procedures <input type="checkbox"/> Wrong equipment for the operation <input type="checkbox"/> Wrong chemical or other used <input type="checkbox"/> No pre-site inspection <input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____
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Report Completed By	Signature	Date

Corrective Action Form

<i>Employee Name or Incident Reference</i>	<i>Date of Incident</i>	<i>Time of Incident</i> <input type="checkbox"/> A.M. <input type="checkbox"/> P.M.	<i>Date Reported</i>
<i>Location of Incident</i>			
<i>Brief Description of Incident</i>			

<i>Corrective Action</i>	
Date Corrective Action Completed	Corrective Action Performed by
Corrective Action Reference Number (e.g. Work Order, P.O. or Account Number)	

Follow Up Action Required
Follow Up To Be Completed By

Report Completed By	Signature	Date
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Employee Incident Statement

Name	Date of Incident	Time of Incident <input type="checkbox"/> A.M. <input type="checkbox"/> P.M.	Date Reported
Department	Job Title		Hire Date
Job Performed	Supervisor		
Incident Location			
Extent of Injury <input type="checkbox"/> No Injury <input type="checkbox"/> First Aid Only <input type="checkbox"/> Taken to Clinic <input type="checkbox"/> Taken to ER		Treating Medical Facility	
Body Part Injured			

[illegible]

Any Other Witnesses? <input type="checkbox"/> Yes <input type="checkbox"/> No	Name	Name	Name
Were there others injured? <input type="checkbox"/> Yes <input type="checkbox"/> No	Name	Name	Name

Report Completed By	Signature	Date
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Incident Witness Statement

Name	Date of Incident	Time of Incident <input type="checkbox"/> A.M. <input type="checkbox"/> P.M.	Date Reported
Department	Job Title		Hire Date
Employer (if not employee)	Phone Number (if not employee)	Name of Supervisor	
Location to Incident			

Description of Incident

Physical Conditions at the Time of Incident			
Any Other Witnesses? <input type="checkbox"/> Yes <input type="checkbox"/> No	Name	Name	Name
Were there others injured? <input type="checkbox"/> Yes <input type="checkbox"/> No	Name	Name	Name

Report Completed By	Signature	Date

First Aid and CPR

Only designated employees should perform first aid and CPR. If the employee is bleeding, unconscious or seriously injured, call 911 (Emergency Services). If the employee has a minor injury, contact the employee's supervisor to obtain medical treatment.

The following person(s) is (are) responsible for performing first aid and CPR duties for our company:

Name	Department	Contact number

We provide first aid kits for our employees and response personnel in the event of an emergency. These kits can be found in the following areas:

First Aid Kit Location

Employees may be exposed to corrosive materials, therefore quick drenching and flushing facilities are provided that meet the specifications of ANSI Z358.1, *Emergency Eyewash and Shower Equipment*.

Emergency Eyewash and Shower Equipment Locations

Because it is reasonably anticipated that employees may be exposed to blood or other potentially infectious materials while rendering first aid, we will provide personal protective equipment to include gloves, safety glasses and breathing barriers. All personal protective equipment will be stored in the first aid kits.

The emergency medical procedure is as follows:

Check

- Check the scene for your safety before you go to help the injured victim.
- Determine the extent of the injuries.

Call

- Call the emergency number for your company.

- Let the supervisor and the supervisor of the injured employee know that an injury has occurred.

Care

- Provide any care for the victim after you have determined it is safe and the emergency number has been called. Only provide care if you have been trained to do so. You are not obligated and it is not a job duty to provide first aid care.

A first aid kit should be located at the main office locations, on the jobsites or in the company vehicles. Our medical provider will provide a list of the first aid kit contents. The contents of the first aid kit should be checked and refilled as part of our preventive maintenance program.

Training

CPR training should take place annually. First aid training should take place every three years, with refreshers annually. Instructors certified by a nationally recognized agency such as the American Red Cross, American Heart Association or the National Safety Council should provide first aid and CPR training.

The Six Steps to Return to Work

Introduction

Workplace injuries can cost you more than just the health and safety of your employees. They can increase your workers compensation premiums, cost you hundreds—even thousands—in unnecessary medical expenses and adversely affect your overhead and administrative costs. But it doesn't have to be this way.

Missouri Employers Mutual Insurance, your workers compensation provider, has developed a Return to Work program to help you combat these costs. This program is your solution to getting a handle on work-related injuries, as well as the high costs associated with them. It aims to return injured employees back to work—and life—as safely and successfully as possible. Just look at the facts:

- Thirty percent of employees will become disabled for at least 90 days between ages 35 and 65, according to the National Association of Life Underwriters.
- Employer costs due to lost-time claims reach as much as 10 percent of payroll. This doesn't even include secondary costs like retraining.
- More than 90 percent of injured employees want to return to work as quickly as possible.

Think a workplace injury can't happen in your business? Think again. Injuries often happen with little or no warning, leaving the employer ill prepared. This manual will provide you all the information you'll need to start controlling your employees' claims while reducing your costs! Specifically, it addresses how to establish a Return to Work program in your workplace, establish a relationship with physicians, communicate the program to your employees and get your employees back to work. If you have questions or would like additional information, contact MEM at 1-800-442-0593 or claims@mem-ins.com.

Step One--Create a Company Culture that Reinforces Return To Work as the "Norm"

Confirm commitment from key employees throughout the organization

- Commitment from management or key executives
- Commitment from Union leadership if applicable

Designate one person to act as the coordinator for the program

- It is essential to be consistent, positive, fair and flexible with injured employees. A single coordinator can assure consistent administration and a consistent message with all employees.

Create written policies and procedures

- Develop Return to Work Policy Statement
- Complete Self Assessment Implementation Guide
- Post Return to Work Statement

Step Two--Establish a Relationship with Treating Physicians or Clinics

Work with your assigned endorsed Dimensions PartnerSM.

Dimensions Partners are managed care organizations that work to control medical and disability costs associated with workplace injuries. They are trained in treating occupational injuries so your injured employees receive optimal medical care.

Designate an initial care provider

An initial care provider is one who can effectively treat minor and urgent injuries. This is an occupational medicine clinic, urgent care clinic or primary care physician used for treating occupational injuries that are not likely to result in loss of life or limb. If you find a desired medical provider is not within your network, your endorsed Dimensions partner welcomes provider nominations. In cases where a network provider is not within a reasonable travel distance, please continue to use providers close to home for immediate care needs. However, for specialized care, consider using providers within the designated network as this is where most cost savings can be realized.

Designate an emergency care center

Determine which hospital is most convenient for injuries perceived to be life or limb-threatening.

Invite your initial care provider to tour your worksite

This will allow your occupational medicine doctor or primary care physician to become familiar with the physical requirements of different positions within your organization.

Step Three--Communicate the Return to Work Plan to Employees

Communicate the policy to employees and supervisors. Emphasize the benefits of early and safe return to work for all parties. Be sure to include these points.

Explain to employees the personal benefits of an early and safe return to work:

- Minimization of physical deconditioning
- Preservation of skills and professional identity
- Promotion of faster recovery

Make employees aware of the providers you have selected.

Be sure to include the:

- Initial care provider (minor and urgent situations)
- Hospital (emergency situations—those that may result in loss of life or limb)

Provide additional, more extensive training for supervisors

Supervisors are your direct link to the injured employee. They need to understand the organization's return to work program thoroughly. When communicating the plan, be sure to emphasize the following points.

- Benefits of the program.
- When and what forms to complete.
- Provide all supervisors with MEM's Injury Reporting Kit. They can be ordered by calling 1-800-442-0593.
- The importance of ensuring that the transitional duty assignments are meaningful.

- The importance that the work is of value to the organization.
- The importance of the work meeting medical restrictions and physical limitations.

Step Four--Determine Functional Capacity Job Descriptions for Present Jobs and Potential Transitional Duty Assignments

Develop written job descriptions

Identify the physical functional requirements for jobs in your workplace. By planning ahead, the manager and department will be prepared to identify for the treating physician the requirements of any transitional duty assignments they may have. Ideally, these should be developed in advance, but can be completed at the time of injury.

- Complete the Employer's Physical Capacities Requirements form

Include the injured employee in planning for transitional duty

An injured employee may have ideas for assignments that they are capable of performing or accommodations that would allow them to perform most, if not all, of their regular duties. Determine the appropriate work hours, shifts, duration and locations of all transitional duty assignments with the assistance of others that may include: the MEM claims representative; the nurse case manager and the attending physician.

Potential assignments for transitional duty might include:

- Safety inspections
- Quality control inspections
- Equipment cleaning
- Housekeeping
- Security assignments
- Miscellaneous clerical duties
- Job sharing

Treat injured employees with respect

Injured employees deserve the same type of care and concern that is provided to employees who are experiencing an illness or injury that is not job related.

Maintain regular contact with injured employees

Direct communication with the injured employee will display a genuine feeling of concern on the employer's part. Some ways to stay in contact include:

- Making regular telephone calls
- Sending get well cards

Communicate with the attending physician

- Send the Employer's Physical Capacities Requirements form to the treating doctor.
- Send a letter (See Appendix) informing the doctor of your return to work program.

Step Five--Establish Expectations for the Transitional Duty Assignment, Including the Duties and Length of the Assignment

Discuss transitional duty assignments with an MEM claims representative

Transitional duty assignments and the wage being paid for them should be discussed with the MEM claims representative prior to the injured employee beginning such an assignment. If the employee's wage for the transitional duty assignment is less than the pre-injury wage, MEM may supplement the wage.

Limit timeframe for transitional duty assignments

Plan for a transitional duty assignment to last no longer than 90 days. Extensions beyond that should be granted on a case-by-case basis. If an employee is unable to resume regular duties after the transitional duty assignment ends, you will want to enlist the assistance of your human resources department or corporate counsel to ensure compliance with all relevant state and federal laws related to disabilities. Laws regarding workers compensation, the Family Medical Leave Act and various other state and federal laws regarding disability may interact.

Make the transitional duty assignment offer in writing

If an extension beyond the original term is offered, a separate offer should be made in writing.

- Complete the Transitional Duty offer

Keep information regarding employee's medical condition confidential

- Medical information provided to supervisors and coworkers should be limited to that which is essential for the management of any transitional duty assignment.
- A release of information should be obtained and kept on file, in addition to being forwarded to MEM.
- Any information regarding medical diagnosis or treatment communicated within the workplace should be strictly related to the workplace injury or illness and any accommodation required as a result of the disability.

Notify an MEM claims representative if the transitional duty offer is refused

If an injured employee refuses a transitional duty assignment that is within the restrictions identified by the treating physician, they may no longer qualify for wage replacement. Notify the MEM claims representative immediately.

Step Six--Follow Up and Evaluate**Establish a timetable/timeframe**

A timeframe should be established at the point the program is implemented for evaluation of the program. This ensures that the program will continue to meet the needs of the organization and its employees. The evaluation should include the following measures:

financial impact

employee satisfaction

Transitional Duty Policy

Purpose

To provide early and safe return to work opportunities for employees who experience work-related injuries. The objective of the return to work policy of (Company Name) is to deliver an injured employee back to the workplace safely and successfully. (Company Name) defines transitional duty as modified duties within the employee's physical abilities, knowledge and skills. Transitional duty positions are developed and assigned using the known physical condition as clarified by the attending physician.

Transitional duty positions are developed with consideration of the employee's physical condition, the business needs of (Company Name) and the availability of transitional duties.

Policy

Employees who have injuries causing restriction of regular duties will be evaluated by a physician for placement in an appropriate transitional duty position.

Procedures

Disability Benefits. While off work or performing a transitional duty assignment for a work related injury, an injured employee may receive disability payments from MEM as specified by law. Questions concerning wage replacement benefits should be directed to the MEM claims representative.

Transitional Duty Assignments. (Company Name) will determine the appropriate work hours, shifts, duration and locations of all transitional duty assignments with the assistance of others that may include: the MEM claims representative; the injured employee; the nurse case manager and the attending physician.

Employment Offer. Employees who qualify for transitional duty assignments will receive a transitional duty offer of employment. MEM may also make wage replacement payments to the employee depending on the particular circumstances.

Communication. It is the responsibility of all parties involved in the transitional duty process at (Company Name) to immediately notify the employee, the attending physician, the supervisor and MEM of changes concerning a transitional duty assignment. Changes may be made upon receipt of notice from the attending physician. Notification of changes must be in writing with copies provided to the employee, attending physician, supervisor and MEM.

Offer Refusal. Refusal of a transitional duty assignment, approved by the attending physician, or failure to report to work, may result in reduction or termination of wage replacement benefits. Refusal of transitional duty may also adversely affect employment, reinstatement and vocational assistance rights.

Permanent Restrictions. If an employee has permanent work restrictions preventing a return to regular work, the transitional duty position may end. (Company Name) will determine if a regular/ modified position exists and whether the employee will be offered the modified work as the new regular work assignment. (Company Name) will determine if the physical condition presents a substantial obstacle to employment and if worksite modifications would allow continued employment.

Employee Responsibilities

Reporting incidents and injuries: When an on-the-job injury occurs, it must be reported immediately to the supervisor. Failure to do so could result in inappropriate medical care or the claim being delayed or denied.

Incident: If an incident occurs, whether or not professional medical assistance is required, the employee must fill out an incident report by the end of the work shift.

Injury: If an injury occurs, the employee should report the injury immediately to the supervisor on duty. If the situation is a medical emergency, the employee or person assisting should call 911.

Physical Capabilities: If the employee obtains professional medical treatment, the physician should be advised that transitional duty positions are available. The employee should take the Employer's Physical Capabilities Requirements Form to the physician and ask the physician to complete the Return to Work/Physical Capability Form. This will determine what duties the injured employee will be able to perform.

Work Release: The employee may not return to work without a signed release form from the attending physician. When the attending physician releases the employee to return to work in any capacity, the employee must furnish the supervisor a written statement of any physical work restrictions or conditions by the next shift. Physician specified physical work restrictions will trigger the Transitional Duty Program.

Total Restriction: If the employee is unable to return to work in any capacity, the employee must call in each week at times designated by the supervisor to report medical status.

Notification of Changes in Medical Condition: The employee will notify the supervisor within 24 hours of all changes in medical condition.

Supervisor Name _____ Telephone _____

Call: Sun Mon Tues Wed Fri Sat at _____ a.m./p.m.

Contact: While off work, the employee must provide the supervisor and/or personnel department with a current telephone number and an address where the employee can be reached.

Employee Acknowledgment

- ☐ The transitional duty policy and procedures have been explained to me.
- ☐ I have read and fully understand my specific responsibilities.
- ☐ I agree to observe and follow these procedures.
- ☐ I understand failure to complete my responsibilities may result in disciplinary action up to including termination.
- ☐ I have received a copy of this policy and procedure.
- ☐ I understand failure to follow these procedures may affect my re-employment, reinstatement and vocational assistance rights.

Signature of Employee _____ **Date** _____

Transitional Duty Policy

Sample For Posting

(Company's Name) is committed to providing a safe and healthy workplace for our employees. Preventing injuries and illness is our primary objective. In an effort to minimize disability due to industrial injuries or illness, we have developed a **Transitional Return to Work Plan**.

The program is a team effort and all levels of management, including supervisors and employees, have made a commitment.

If an employee is injured, we will use our **Return to Work** process to provide assistance. We will get immediate, appropriate medical attention for employees who are injured on the job and attempt to create opportunities for them to return to safe, productive work as soon as medically appropriate.

Our ultimate goal is to return employees to their original job. However, if an injured employee is unable to perform all of the tasks of the original job, we will make every effort to provide alternative productive work for (insert timeframe) while the employee is recovering and unable to return to regular duties. The goal of our program is to provide meaningful work assignments as soon as is feasible following an injury, while avoiding any aggravation of the injury.

(Signature line)

(Title—President, CEO, Etc.)

(Company Name)

Self-Assessment and Implementation Guide

Program Element (Employee who completes should initial)	Initials	Date
Return to Work policy written Comments:		
Written policy posted and accessible to employees Comments:		
Policies communicated to employees Comments:		
Individual designated to coordinate disability management Comments:		
Functional job descriptions completed Comments:		
Medical provider chosen Comments:		
Injury Reporting Kit available (Including first line supervisors) Comments:		
Potential Transitional Duty assignment identified Comments:		

Letter to Attending Physician—Sample

(Date of letter)

(Doctor's Name)

(Doctor's Address)

Dear Dr. :

(Employee's Name) is employed by (Company's Name) as a (job title). He/she was injured on (date of injury), and you treated him/her on (date of treatment).

(Company Name) has implemented a return to work program. This program is designed to return an injured employee to the workplace as soon as medically appropriate. If (employee name) is unable to return to his/her original job, we will make every attempt to return this employee to modified duties or an alternative duty position. We will ensure that this position meets with ALL medical restrictions that you prescribe. (Employee's Name) is aware of our desire to return him/her to the workplace. If necessary, we are willing to rearrange work schedules around diagnostic or treatment appointments.

Our company has identified job duties that may be suitable for a "return to work" situation. Enclosed is a job description with attached physical demands that may be appropriate for (employee name) based on our knowledge of his/her injury. Please assist us by reviewing the attached position and providing your recommendations. We would also like updated recommendations after each appointment.

Please call me at (company's telephone number) if you have any questions about our return to work program or the proposed job position. Thank you in advance for your participation in our efforts to return (employee's name) to a safe and productive workplace.

Sincerely,

(Company's representative)

(Title)

(Company Name)

<p>time with a degree of pushing and pulling of arm and/or leg controls.</p> <p>Sedentary work. Lifting 10 lbs. maximum and occasionally lifting and/or carrying such articles as files, light packages and small tools. Although a sedentary job is defined as one which involves sitting, a certain amount of walking and standing is often necessary. Jobs are sedentary if walking and standing are required only occasionally and other sedentary criteria are met.</p>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>
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Employer's Physical Capacities Requirements

Employee Name _____

Policyholder Name _____ Policy No. _____

Department _____

Job Title _____

Hours per shift _____ Date of injury _____

Basic job requirements						Other physical requirements
	Continuously 67-100%	Frequently 34-66%	Occasionally 11-33%	Seldom 1-10%	Restricted 0%	
Sitting						<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>
Standing						
Walking						
Mobility						
Lifting						
Bending						
Squatting						
Reaching						
Kneeling						
Pushing						
Pulling						
Lifting						
0 to 10 lbs						
11 to 25 lbs						
26 to 50 lbs						
51 to 75 lbs						
76 to 100 lbs						
100+ lbs						
Carrying weight						
0 to 10 lbs						
11 to 25 lbs						
26 to 50 lbs						
51 to 75 lbs						
76 to 100 lbs						
100+ lbs						
Repetitive motion						
	Right hand		Left hand			
Dexterity	___ Yes	___ No	___ Yes	___ No		
Grasping	___ Yes	___ No	___ Yes	___ No		
Writing	___ Yes	___ No	___ Yes	___ No		
Typing	___ Yes	___ No	___ Yes	___ No		

Employer representative signature _____ Date _____

Employer/insurer contact _____

Using The Employer's Physical Capacities Requirements Form

The Employer's Physical Capacities Requirements form asks you, as the employer, to show information about the physical demands of your employees. It also leaves room for you to comment on other job factors, such as environmental conditions, or allows you to describe a task.

Follow these steps for completing the assessment.

1. Introduction

- **Employee name:** Name of the injured employee.
- **Department:** Name of the department in which employee works. Describe the nature of the work if department name is not descriptive.
- **Job title:** Provide the employee's job title or describe the employee's job duties.
- **Hours per shift:** List shift or hours worked and whether the employee works full or part time. Include any routine overtime the employee works.

2. Basic Job Requirements

- A. **Postures:** Observe the employee's postures (sitting, standing, walking or driving) while performing their job tasks. Check the box indicating the percent of time the employee stays in one posture.
- B. **Mobility, Lifting, Carrying Weight:** Observe the employee's actions and motions while performing their job tasks. In the other physical requirements section to the right, write a description that explains why the employee must make the action or motion (example: pushes mail cart across room). Show the total amount of time during the day the employee does each action or motion using these definitions.

Lifting Manual lifting

Example: Lifting a box without the aid of a mechanical device.

Bending Using the back and legs to bend forward and downward.

Example: Leaning over a car engine to do repairs.

Squatting Lowering the body by bending at the knees.

Example: Checking the air pressure in a car's tires.

Reaching Moving the hands and arms toward an object at arm's length in any direction from the body.

Example: Reaching upwards to change an overhead light bulb.

Kneeling Lowering the body onto one or both knees.

Example: Kneeling onto one knee to remove a flat tire from a car.

Pushing Moving an object away from the body, including kicking, slapping, pressing and striking an object.

Example: Pushing a dolly.

Pulling Moving an object toward the body, including jerking or sliding an object.

Example: Dragging a box across the floor toward you.

Lifting and Carrying Weight Observe any manual lifting the employee does while completing a task. On line one under mobility note the frequency with which the employee lifts weight during the day. If manual lifting is part of the employee's job, mark

the appropriate frequency on the form. Use the other physical requirements section to the right to explain how high the load must be lifted.

Example 1: a box is lifted from the floor to waist height, (about three feet) and how far the weight is carried

Example 2: from the dock to the processing table, (about 20 feet).

- C. **Repetitive Motion:** Observe any motions that are done continuously in the same manner (example: typing at a computer). Note what actions are performed and for which hand.
- D. **Other Physical Requirements:** In addition to using this section to show cumulative time in one posture and to provide additional information about lifting and carrying, the other physical requirements section can be used to describe other actions and motions of the employee. It can also be used to describe any environmental conditions the employee is exposed to, such as noise levels, lighting and temperature conditions.

Definitions for other common actions and motions include:

Balancing Moving in a manner that requires the employee to keep from falling because of unstable surfaces, such as slippery, moving or narrow spaces.

Example: Replacing shingles on a steep roof.

Climbing Using legs, arms, hands or feet to move up or down a structure like stairs, ladders, scaffolds and ramps.

Example: Climbing a telephone pole to repair wires.

Crawling Moving forward while on the hands and knees.

Example: Crawling through a space to get to plumbing.

Handling Using hands to hold, grasp, grip or turn an object.

Example: Using a drill.

Fingering Using fingers to pinch, pick or manipulate objects, especially small ones.

Example: Picking up nuts and placing them on bolts.

Feeling Using hands and fingers to perceive the shape, size, temperature or characteristics of an object.

Example: Laying the hand on the hood of a car to check for heat.

Twisting Rotating the upper body in a different direction than the lower body.

Example: Reaching behind the body to pick up parts while remaining seated at a machine.

Transitional Duty Agreement (sample)

Employee's Name: _____

Department _____

Employee's Title: _____

Date: _____

My work duties are changed from (date) _____ until (date) _____

I am assigned to alternative work duties or limited duties. My new work duties are listed below.

The duties above have been described to my doctor. My doctor has signed a written agreement stating that I may do these activities under the following medical restrictions.

I agree to do the above work duties and follow my doctor's medical restrictions. If I ignore my medical restrictions, I understand that my employer may take disciplinary action.

If a supervisor or anyone else asks me to do work assignments or activities that don't follow my medical restrictions, I must immediately report the situation to

_____ (name of return to work coordinator),
who will take action to correct the situation.

If I think my new work duties are causing discomfort or making my medical condition worse, I will report this immediately to

_____ (name of return to work coordinator).

Employee signature:

Date: _____

Supervisor signature:

Date: _____

Return to Work Coordinator:

Date: _____

Authorization to Obtain Information

I authorize any licensed physician, medical practitioner, nurse, pharmacist, hospital, clinic or other medical or medically related facility, insurance or reinsurance company, consumer reporting agency, employer or former employer who has any information as to the diagnosis, treatment or prognosis of any physical or mental condition of me, and any information regarding my occupation and salary, to give any and all such information to Missouri Employers Mutual Insurance, its employees, counsel for employer/insurer, reinsurers, any designated Managed Care Organization, and the Division of Workers' Compensation to which I am submitting a claim.

I understand that the information obtained by use of this authorization will be used by the company to determine eligibility for workers compensation benefits. Any information obtained will not be released to any person or organization except to other persons or organizations performing a business or legal service in connection with my claim or as may be otherwise permitted or required by law. The release of my Protected Health Information to a person or organization not subject to federal law governing privacy, which then rediscloses my Protected Health Information, may mean that the protections afforded by the federal privacy laws no longer apply.

I understand the information contained in these records may include information relating to sexually transmitted disease, acquired immunodeficiency syndrome (AIDS), or human immunodeficiency virus (HIV). It may also include information about behavioral or mental health services, and drug or alcohol use or abuse. **I hereby consent and authorize** the medical record provider to release and provide records containing this information to Missouri Employers Mutual Insurance.

I know that I may request to receive a copy of this authorization.

I agree that a photocopy of this authorization shall be as valid as the original.

I agree that this authorization shall be valid for the duration of this claim, unless I choose to withdraw this authorization in writing.

Date _____

Print Name of Injured Employee _____

**Signature of Injured Employee
or Authorized Representative** _____

